601
48

UNIVERSITY OF CALIFORNIA
SEP - 4 1941
LIBRARY

JOURNAL of the AMERICAN VETERINARY MEDICAL ASSOCIATION

UME CIX, NUMBER 774 SEPTEMBER 1941

TABLE OF CONTENTS, PAGE II

"CORN STATES"

in these

Eventful Years

In our country, the veterinarian's year closes and starts anew with each annual meeting of the American Veterinary Medical Association which, this year, completed one of its most significant conventions.

The Indianapolis meeting marked the close of a year during which the relation of farm-animal health to national defense and intramural welfare was systematically weighed and appraised—veterinary science and its application in the farm, ranch and home received nation-wide attention among the general population.

The inter-convention year now closed will long be remembered as a period wherein new honor was conferred upon the veterinarian expertly trained in animal production, disease control and public health. To have maintained, through the years, the means of participating in the upward trend of the veterinary profession in these and other respects has been a public obligation as well as a personal privilege in the scientific and administrative councils of

The

CORN STATES SERUM COMPANY

Omaha

Norden Certified
BOLETS

So much better than brittle, breakable capsules. Firm to handle. Bolets insure dosage accuracy, efficiency and dependability, **yet they cost less.**

Aloin-Calomel

(Aloin, 240 gr.; Ol. Capsicum, 4 min.; Calomel, 60 gr.; Strychnine, 1 gr.) Efficient, economical.

Carbolets

(Charcoal in Bolet base). Antacid, antiferment, absorbent. For oral and uterine use—cost less.

Carminative

(Cresol, Salicylic Acid, Ginger, Capsicum, Nux Vomica, Sod. Carbonate). Stronger than Reeks. Disintegrate quickly in stomach.

Equine Purgative

(Aloes, Barium Chloride, Nux Vomica, Podophyllum and Ginger). Full dosage, rapidly replacing capsules.

Phenozine

(Each Bolet contains 12 gms. phenothiazine). New Anthelmintic for convenient administration to sheep, large hogs and cattle.

Sulfanilamide

(250 gr. Sulfanilamide). For economical and convenient administration of large dosage.

Thiomethylene

(Methylene Blue, Sod. Thiosulphate, Sod. Nitrite, Dextrose). Gastric and intestinal detoxifier. Adjunct in hydrocyanic poisoning.

Bolets are shaped for easy swallowing and fit the Balling Gun.

If you like one you will like the rest.

NORDEN LABORATORIES
LINCOLN *The Mark of Quality* NEBRASKA

Journal of the American Veterinary Medical Association

CONTENTS

Excerpts from the Indianapolis Session

The Veterinary Service Is Prepared to Function in War or Peace *(Address of the President)*—A. E. Wight 177

Photographs 179, 183, 184, 188

The New President 189

Organization of the American Veterinary Medical Association, 1941-42 191

Abstracts of Convention Papers 196

(Bovine Mastitis, 196, 197; Calf Pneumonia, 198; Bovine Sterility, 199; Keratitis in Cattle, 199; Acetonemia, 200; Vitamin Deficiencies, 200; Retained Placenta, 201; Cesarean Section (Bovine), 201; Bovine Encephalomyelitis, 202; Worm Parasites of Cattle, 202; Vitamin A Deficiencies, 203; Brucella Abortus Strain 19, 203; Acetonemia and Albuminuria (Bovine), 204; Leucemia and Lymphocytoma (Bovine), 204; Nutritional Deficiencies (Bovine), 205; Brucella Abortus in the Udder, 206; Pathology of Pneumonia, 207; Reindeer and Plains Buffalo and Deer, 207; Army Remount Breeding, 208; Embryotomy (Mare), 208; Diseases of the Newborn (Equine), 209; Animals in Chemical Warfare, 209; Vitamin Requirements of Thoroughbreds, 210; Hemorrhagic Dysentery of Swine, 210; Swine Problems, 211; In Vitro Neutralization of Hog-Cholera Virus with Hog-Cholera Antiserum, 211; Baby-Pig Mortality: Acute Hypoglycemia in Newborn Pigs, 211; Plastic Surgery, 212; Distemper Inclusion Bodies, 213; Canine Encephalitis, 213; Fowl-Leucosis Complex, 214; Vinylite Resin Corrosion Preparations in the Study of the Avian Leucosis Complex, 214; Avian Encephalomyelitis, 215; Wild Bird Autopsies, 215; Salmonella Infections of Turkeys, 216; Paratyphoid in Quail, 217; Fowl Leucosis, 217, 218; Serial Passage, 219; A Protozoon of Turkeys, 219; Avian Encephalomyelitis, 220; Poultry Industry Needs the Veterinarian, 221; Public Relations, 222; Livestock Transportation, 222; Containers for Fluid Milk, 223.)

(Continued on page iv)

Officers: H. W. Jakeman, *President;* W. W. Dimock, *President-Elect;* J. G. Hardenbergh, *Executive Secretary;* M. Jacob, *Treasurer.*

Executive Board: O. V. Brumley, *Chairman;* C. W. Bower, *Member-at-Large;* A. E. Cameron, *1st District;* R. A. Hendershott, *2nd District;* J. L. Axby, *3rd District;* W. E. Cotton, *4th District;* F. M. Wilson, *5th District;* W. L. Curtis, *6th District;* Chas. H. Seagraves, *7th District;* Ashe Lockhart, *8th District;* Edwin Laitinen, *9th District;* O. V. Brumley, *10th District;* H. W. Jakeman, *ex-officio;* W. W. Dimock, *ex-officio.*

Board of Governors: O. V. Brumley, *Chairman;* H. W. Jakeman; W. W. Dimock (= Committee on Journal).

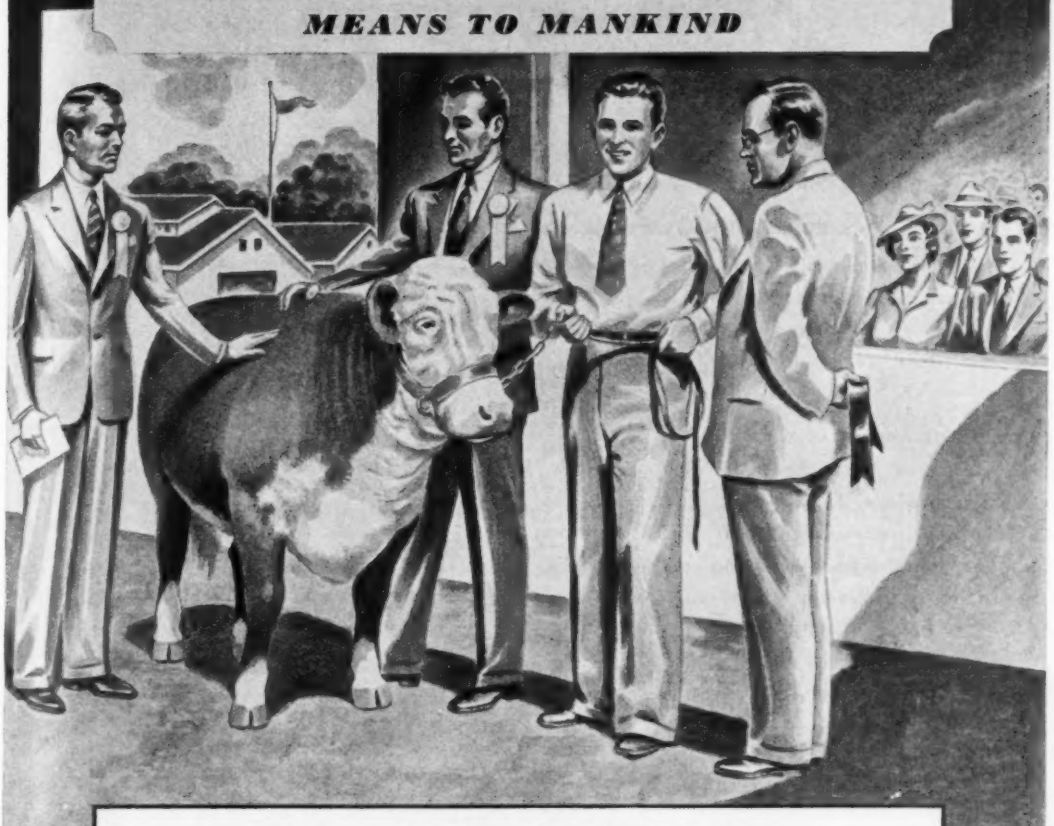
Editorial Staff: L. A. Merillat and J. G. Hardenbergh, *Editors;* J. J. Shaffer, *Assistant to the Editors. Associate Editors:* J. R. Beach, E. A. Benbrook, R. R. Birch, John B. Bryant, J. A. Campbell, C. H. Case, James Farquharson, Ward Giltner, W. F. Guard, Raymond A. Kelser, J. A. S. Millar, John R. Mohler, J. E. Shillinger.

Foreign Language Abstracting: Chas. H. Haasjes (Dutch), E. E. Hamann (German), A. G. Karlson (Scandinavian).

$5.00 per annum. Foreign $6.00; Canada $6.00 Single Copies 75 cts. prepaid in U. S.

Published monthly at 600 S. Michigan Ave., Chicago, Ill., by the American Veterinary Medical Association. Entered as second class matter August 10, 1932, at the Post Office at Chicago, Illinois, under the act of March 3, 1879. Accepted for mailing at special rate of postage provided for in Section 538, act of February 28, 1925, authorized August 10, 1932. Contents copyright 1941. Reproduction of any part of this publication is prohibited, unless special permission is given. Permission will be given if the purpose seems justifiable and, in signed articles, if the rights or requests of the author are not violated thereby. Reprints should be ordered in advance. Prices will be quoted after publication. Please send prompt notice of change of address, giving both old and new. Advise whether the change is temporary or permanent. Address all correspondence to American Veterinary Medical Association.

WHAT THE
VETERINARY PROFESSION
MEANS TO MANKIND



An Example from the Cattle Shows

● Through efforts begun as long ago as 1907, veterinarians finally succeeded in obtaining stringent regulations against the entry of tuberculous animals in cattle shows held in the United States.

What this has meant is demonstrated by the sad experience of the cattle raisers on the island of Guernsey. Cows on that island were free of the disease until a group of cattle which had been shown at a British exhibition having no anti-tuberculosis regulations introduced the disease on the island and it spread among the other animals there.

Only the vigilance of the American veterinary profession has prevented repeated occurrences of that nature from interfering with the veterinary-sponsored and veterinarian-administered control program.

As a result of this program, in 1940, the herds of America were practically free of tuberculosis, formerly a tremendous drain on national resources and a source of much human disease.

One of a series of advertisements on behalf of the Veterinary Profession published by

ALLIED LABORATORIES, *INC.*

operating

Pitman-Moore Co., Indianapolis, Ind.
Royal Serum Co., Kansas City, Kansas
Sioux City Serum Co., Sioux City, Iowa
Sioux Falls Serum Co., Sioux Falls, S. D.
United Serum Co., Kansas City, Kansas

Copies of this page, free of advertising, sent on request.

CONTENTS—Continued

General Articles

Is Phenothiazine Poisonous to Horses?—H. Schmidt, T. T. Christian and W. M. Smotherman 225

The Sectional Incidence of Swine Erysipelas in the United States—W. T. Spencer..... 229

The Ventilation Problem in Indoor Battery Plants—M. W. Emmel..... 232

Surgery and Obstetrics (and Problems of Breeding)

Artificially Induced Fibrosis: Story of a Regrettable Fraud—James Farquharson..... 235

Chloral in Pig Surgery..... 236

A Parasitic Monstrosity..... 237

The Blood Groups of Cattle..... 237

Clinical Data

Clinical Notes 238

Carcinoma of the Prostate Gland in Dogs: A Report of Three Cases—Carl F. Schlotthauer and J. A. S. Millar..... 239

An Electrocutor for Animals—E. A. Benbrook and R. A. Runnells..... 242

The Sulfonamide Compounds in Pneumonia..... 243

Insect Exterminator 243

Editorial

Fortifying Foods with Vitamins: Vitamin Therapeusis..... 244

Foot-and-Mouth Disease in Eire..... 245

Dislocating the Veterinary Service..... 245

Department of Agriculture Officials Enjoined in Organizing Farmers..... 246

Current Literature

Abstracts: Tube Test vs. Whole Blood Test in Pullorum-Disease Work, 247; The Veterinary Profession and War Economy, 247; Pastoral Hemoglobinuria of Cattle, 247; Crystal-Violet and Formalin Hog-Cholera Vaccines, 247; Mallein Test in the Dutch East Indies, 248; The Health of New Yorkers, 248; The Dose of Phenothiazine in Horses, 248; The Diagnosis of Influenza, 248.

Book Notices: The Boston Terrier, 249; First Aid to Dogs and Cats, 249.

The News

AVMA Activities 250

Applications 251

U. S. Government..... 256

Among the States..... 257

Coming Meetings 261

Personal Notes 262

Deaths 262

Miscellaneous

Force vs. Persuasion in Disease Control, 187; The American Patriot, 190; The Producers of Food in War, 224; Milking Not Purely Mechanical, 234.

An' Related Topics..... xvi

Journal
of the
American Veterinary Medical Association

Copyright 1941 by American Veterinary Medical Association
600 S. Michigan Ave., Chicago, Ill.

VOL. XCIX SEPTEMBER 1941 NO. 774

The Veterinary Service Is Prepared to Function in War or Peace*

A. E. WIGHT, M.D.V.
Washington, D. C.

I FEEL GREATLY honored in being able to appear before you today as the president of the American Veterinary Medical Association. We meet at a critical time—during a period that will be remembered as one of the significant turning points of history.

Our profession is playing, and must continue to play, an important part in the world crisis. With most of Europe and Asia, and a great part of Africa, already caught in the conflagration of war, and with the flames threatening to spread to our own country, the problem of conserving the nation's food supply will daily become more pressing and more complex.

That we recognize the seriousness of the problems confronting us is shown by the large attendance at this, our seventy-eighth annual meeting. I am proud to belong to a group which has such a vital rôle to play and which so willingly accepts its obligations.

INDIANAPOLIS IMPORTANT IN VETERINARY HISTORY

The city in which we meet has a special claim upon the members of our profession, and it is a pleasure for me to remind you of that claim in case you are unaware of it. Here in Indianapolis, in a building now known as the Athenaeum, directly across Massachusetts avenue from Murat Temple, Walter Reed in the year 1900 presented to the American Public Health Association his classic observations on yellow fever in Cuba.

Walter Reed was not a veterinarian and yellow fever is not a disease of animals, but the groundwork for his discovery of the cause of this dreaded plague and the method of its transmission was laid nearly 50 years ago by scientists in the U. S. Bureau of Animal Industry. I refer to the work of Salmon, Smith, Kilborne and Curtice, who discovered that tick fever in cattle is caused by a protozoan parasite carried by ticks from one animal to another. For the continuation of its life cycle this parasite depends upon the cattle tick, which serves as an intermediate host.

Important as this discovery was to the cattle industry of the South, the knowledge that insects carry specific parasites from the sick to the well, opened the way to an understanding of the cause and method of transmission of many diseases afflicting mankind. Among these diseases are yellow fever, Rocky Mountain spotted fever, typhus fever, malaria and African sleeping sickness. It is probable that the fundamen-

*Address of the President, American Veterinary Medical Association, delivered at the opening session of the seventy-eighth annual meeting, Indianapolis, Ind., August 12, 1941.

tal work of these scientists of the Bureau will provide the basis for the conquest of other diseases in the fields of both veterinary and human medicine.

This is not the first time we have met in Indianapolis. In 1912, 29 years ago, we held an annual meeting here that was marked by many important events, yet it is necessary only to glance back to conditions existing then to realize how far our profession has advanced.

Our educational system has been reformed to the point where, although far from perfect, it promises to surpass that of any other country. Our literature has been immensely improved. We have struck our stride in scientific research. Our clinical work has been elevated from bad or indifferent to excellent. We have made marked progress in eliminating the unethical practices that harm our whole profession.

Partly as a result of the lesson learned during the World War, the Army Veterinary Corps today is on a par with that of any other nation. Despite all we hear about mechanization, horses and mules still play a vital part in war. Current photographs and motion pictures of scenes of war are the proofs.

There is no complete substitute for these animals. Even the supermechanized Germans had no less than 791,000 horses in service in artillery and cavalry units in June, a year ago. Other thousands were in the supply trains. While it is true that the number of animals in our army will be proportionately less than in the past, large numbers still will be required for the supply trains, cavalry and artillery units.

All this means that the prevention of disease and the treatment of sick or injured animals will continue to be an important function of the Veterinary Corps, which, I am glad to say, is equipped to meet its responsibilities. However, on this phase of our profession's service I need not dwell, for we are fortunate in having among our speakers Colonel R. A. Kelser, chief of the veterinary division of the Surgeon General's Office, who will discuss far more ably and fully than I can the part of the Veterinary Corps in the defense program.

NATIONAL PREPAREDNESS PROGRAM BASICALLY A VETERINARY PROBLEM

The word "defense" is on every tongue and in everyone's thoughts, and I want to point out that our defense program is not aimed merely at passive defense. We are not building a great armament of ships, planes, tanks and guns to be used only after someone steps in and kicks us. The fall of France provides a ghastly example of the results of passive defense.

Our program symbolizes dynamic defense. We are preparing ourselves to act swiftly and powerfully, perhaps thousands of miles from our shores, whenever any move by an aggressor power appears to constitute a threat to our security. The lesson already written by the present war proves that this is the only type of defense program that provides both a bulwark against war and assurance of victory if war should come.

Our defense program can be converted overnight into a war program, and in the event of war veterinarians will carry an even greater responsibility to public health than they now do. While the armaments we are building are vitally necessary to our security, an adequate supply of wholesome, nutritious meats, dairy and poultry products is no less vital to a nation building up its defenses than to one engaged in war. The health and stamina of our people depend upon the supply of these foods in amounts seldom realized. It is the duty of our profession to protect this supply by assuring its sanitary preparation for the market and by controlling those diseases threatening its existence, which in many instances are transmissible to human beings.

Already in Europe the war is taking a heavy toll in animals afflicted with disease because disease control is breaking down. Even in times of peace it may be difficult to cope with sweeping contagions. Fortunately, though, at no time in history has the importance of domestic animals been so fully realized and the veterinary profession so generally recognized as an essential factor in assuring the nation a sufficient food supply.

The Association is fully aware of the re-

At the Indianapolis Convention

Upper left: I. E. Newsom, chairman of the Executive Board, awarding presidential scroll to A. E. Wight.

Upper right: H. W. Jakeman receiving the president's key from Chairman Newsom.

Lower left: Presentation of Twelfth International Veterinary Congress prize to Adolph Eichhorn.

Lower right: President Wight accepting the Union Jack from J. E. Mumford (center) and Wm. Moynihan of Toronto, Ont., presented to the AVMA by the Ontario Veterinary Association.

Inset: W. W. Dimock, newly chosen president-elect.

sponsibilities the veterinary profession has to assume during the present emergency. Early this spring your president appointed a special Committee on Veterinary Participation in National Defense to coöperate with the government's agencies engaged in the defense program. This committee acts as a liaison between the profession and defense agencies, to the end that confusion and delay may be avoided in making the services of our profession available to the nation.

The position of veterinarians in the armed forces and of those studying to be veterinarians also has received attention. No provision for veterinarians or veterinary students was contained in the bill introduced in the Senate by Murray of Montana to amend the Selective Service Act by providing deferment for medical and dental students and the commissioning of doctors and dentists in the Officers' Reserve Corps. It became the responsibility of the Association to secure, if possible, a similar provision for veterinarians and veterinary students. Otherwise, our ability to maintain animal and public health might have been seriously impaired.

During the latter part of February and early in March, appropriate communications were addressed to Senator Murray and members of the Senate Committee on Military Affairs by the officers of this association, by practically every state veterinary association, by the deans of veterinary schools and by others. These communications set forth the compelling reasons that our profession should be included in the bill and urged that it be suitably amended. As a result of these activities, assurances were received that due consideration would be given to graduate veterinarians and veterinary students when the bill came to hearing.

At the hearing on the bill, data were presented by Congressman George W. Gillie and H. W. Schoening, chief of the Pathological Division of the U. S. Bureau of Animal Industry. Your president was in attendance throughout the hearing and was called upon to testify. Claims of the veterinary profession for recognition in the bill were also ably supported by representatives of the medical and dental corps of the Army, and by Morris Fishbein, editor of *The Journal of the American Medical Association.* Assistance already had been rendered by Colonel Kelser and by many others. At the conclusion of the hearing your president submitted a written statement on behalf of the Association and the veterinary profession.

The Murray Bill was tabled, but it was brought out clearly at the hearing that the Selective Service Act provides a basis for deferment if the registrant is found by the local board to be a necessary man in any pursuit, the maintenance of which is necessary to the national health, safety, or interest. The heads of the Army Veterinary Corps and other representatives of the surgeon general of the Army prepared to present proof of the need for deferment of veterinary students. To this end the Association was called upon to submit pertinent data for use by the surgeon general in his presentation to the Selective Service officials. Through the coöperation of livestock sanitary officials, deans of veterinary schools and many other qualified persons, a survey was conducted and the results were forwarded to Washington. The survey clearly showed that if deferment were not extended to veterinary students, many sections of the country would not have a sufficient number of veterinarians.

The prompt and efficient manner in which our association acted and the coöperation offered by all branches of our profession are responsible for the fact that in May, Selective Service headquarters advised local draft boards to defer military training of veterinary graduates and students under the same procedure as it had a short time previously recommended for the medical and dental professions and certain other professional fields.

SOME ACTIVITIES OF CENTRAL OFFICE REVIEWED

We are fortunate that during a period of greatly increased activity, due partly to the defense program, the Association has had as executive secretary a man of the caliber of John G. Hardenbergh. Dr. Hardenbergh's qualifications for the position

are so widely known that I need make little comment on them. For years he has been one of the outstanding members of our profession and we are benefiting greatly from the responsibilities he has assumed at the headquarters office.

We are fortunate, also, that L. A. Merillat continues to edit the JOURNAL as well as the new quarterly periodical, AMERICAN JOURNAL OF VETERINARY RESEARCH. The latter publication is a new venture. The first issue appeared in October of 1940. The response with which it has been met has more than justified the faith of those who took the lead in urging the need for it. Prior to establishing this publication it was utterly impossible to publish many valuable scientific articles. The number awaiting publication mounted from month to month. With no other outlet for reports on their original researches, members of the Association justly complained that we were not fulfilling our obligations to them when we were unable to provide space for their reports, and thus protect their priority credits.

The research quarterly was established as a forum for reports on original research, and the experience of the past ten months indicates a brilliant future for it. Abstracts of articles appearing therein circulate throughout the world of science by way of *Cumulus Index Medicus* and *Biological Abstracts.*

In addition to witnessing the birth of our new research quarterly, the past year has seen the publication of the eighth edition of the Association's directory. I think you will agree that this new edition marks a distinct advance over its predecessors. The layout and general arrangement of subject matter have been greatly improved. In addition to listing all members alphabetically to simplify the task of locating a member, the new directory contains a wealth of information of value to all members of our profession. The Association is continuing to compile the census data of both members and non-members according to the branches of service in which they are engaged and it is hoped to include this information, as regards members, in some future edition.

MEMBERSHIP CONTINUES TO GROW; 60 TO 70 PER CENT ARE PRACTITIONERS

This year of unusual activity on the part of the Association has brought a healthy increase in the membership. At the time of our meeting last year, we had slightly more than 6,200 members, a high mark in our history. Since then a still higher mark has been reached. The membership today is about 6,700. More than 90 per cent of the 1941 graduates of veterinary schools have joined the association—another record of which we are proud. The increase in the number of Indiana members is gratifying. It shows the excellent work done by Resident Secretary J. C. Schoenlaub and other members.

A steady, year-by-year growth in membership is significant because it not only adds to our strength, but also enables widening the scope of our activities, and it shows that veterinarians are becoming increasingly aware of the complexity of the problems of their profession and are eager to keep in touch with the many developments that bear upon them. A strong and growing association is a certain sign of an alert and intelligent profession.

While on the subject of membership I should like to reëmphasize what my predecessor in office said last year at the Washington meeting about greater practitioner participation in the affairs of the Association. The strength of the American Veterinary Medical Association lies in the fact that it represents all branches of the profession—practitioners, educators and research workers, regulatory and public health men, and producers of biologic products. From 60 to 70 per cent of our members, however, are practitioners. We are primarily, therefore, a practitioners' organization and, logically, a majority of the members of the House of Representatives and the Executive Board should be practitioners. Such a majority can come into being whenever the practicing members learn to use and wish to use the weight of their numbers.

Delegates to the House of Representatives are chosen by state associations, either by election or appointment. They

represent the membership and their decision is final. Every practitioner who belongs to a state association can thus share in running the national association by choosing delegates who may or may not be practitioners, but who will certainly represent his point of view.

The Executive Board is composed of ten members elected by mail ballot, a member-at-large elected by popular vote at an annual meeting, the president, and the president-elect. The latter, who succeeds the president, is also chosen by popular vote at each annual meeting.

This association is a democratic one. It is completely responsive to the wishes and interests of the majority of its members. It has provided the machinery for its members to use in expressing their wishes and interests. The members need only to use this machinery.

It would seem that some consideration should be given by the various state veterinary associations, the deans of the veterinary colleges and the proper officers of this association to the establishment of a national board of examiners for veterinarians who are to engage in practice. If an applicant were able to pass an examination given by a national board and then permitted to practice in any state, it would be to his advantage.

HIGHER STANDARDS OF VETERINARY EDUCATION BRING INCREASED PUBLIC RESPECT FOR PROFESSION

Nothing has contributed more to the advancement of our profession during recent years than the progress that has been made, and that continues to be made, in education. Higher standards of veterinary education have done more than anything else to increase the public's respect for the veterinarian. At the same time, these higher standards are unquestionably producing men who are far better qualified to serve the public than the graduates of an earlier era.

Higher standards have been accompanied by a growing demand for veterinary education. While the colleges have been raising their matriculation requirements, the number of students asking for admission has steadily increased. The greater esteem in which our profession is held by the public is undoubtedly one of the factors that is turning the thoughts of a growing number of young men towards a veterinary career.

While there has been a general and much needed increase in the equipment and teaching staffs of veterinary colleges, the present number of colleges can scarcely expect to provide for many more students than are now being accommodated. The only practical solution of the problem appears to be the establishment of additional schools. We must all hope, and do everything in our power to make certain, that any new veterinary schools will maintain the educational standards which the established institutions have achieved. Any letdown in these standards would injure the entire profession.

NEW SYSTEM ADOPTED BY CIVIL SERVICE FOR EXAMINING BAI APPLICANTS

Our members will be interested in knowing that the U. S. Civil Service Commission has recently issued examination announcement No. 115 (unassembled) for the position of junior veterinarian in the U. S. Bureau of Animal Industry. It is a departure from the former method of certifying junior veterinarians to the Bureau, as the requirement of a written competitive examination has been discontinued. The applicants will not be required to report for examination, but will be rated on the extent and quality of their experience relative to the duties of the position, and on their fitness, on a scale of 100, such ratings being based upon competitors' sworn statements in their applications and upon corroborative evidence. The qualifications applicants must possess are listed in the announcement.

BOVINE TUBERCULOSIS

I have referred to the vital contribution the profession makes to animal and human health through the control and eradication of diseases transmitted to other animals and to man. As you all know, our profession has practically eradicated bovine tuberculosis in the United States. On November 1, 1940, this disease in cattle was

Veterinary Director General of Canada Responds to the Governor of Indiana

Governor Henry Schricker of Indiana (right) delivered the Address of Welcome at the opening session of the seventy-eighth annual meeting. A. E. Cameron (left), veterinary director general of the Dominion of Canada, responded. [These addresses will be published in the next issue of the JOURNAL.]

suppressed to a point where all counties in the United States could be designated as modified accredited tuberculosis-free areas. The municipalities of Puerto Rico and the Virgin Islands also had attained this status.

It was in 1917—only 24 years ago—that the coöperative tuberculosis-eradication campaign was begun. The campaign was under way for six years before the first counties were designated as modified accredited territory by the Department of Agriculture, although 204 herds had been accredited as tuberculosis-free during the first year. By November 1927—ten years after the work was started—more than 142,000 herds were accredited. These herds comprised nearly 2 million cattle.

Up to July 1, 1941, when approximately 241,950,000 tuberculin tests and retests had been applied, about 3,809,000 cattle had reacted and been removed for slaughter.

I have said that the conquest of tuberculosis is a victory of the veterinary profession, and this is true, but we must acknowledge the coöperation given by herd owners and others interested in the work. There still would be some heavily infected areas had it not been for the readiness of these persons to aid.

Veterinarians, however, were outstanding in stressing the need for some form of systematic tuberculin testing that would give promise of ultimately eradicating the disease. Pioneers I might mention—all state veternarians—were Leonard Pearson in Pennsylvania, D. F. Luckey in Missouri, O. E. Dyson in Illinois, J. I. Gibson in Iowa, C. E. Cotton in Minnesota and W. J. Butler in Montana. To them should be given much of the credit for the stamping out of this disease.

When I say stamping out, I should follow with a word of warning. All cattle must now be regarded as highly susceptible to the disease; permanent eradication depends entirely upon the vigilance of the veterinary profession and upon continuance of federal and state appropriations sufficient to maintain adequate control.

BRUCELLOSIS-ERADICATION CAMPAIGN MOVES FORWARD

With bovine tuberculosis no longer an active menace to animal or human health, the campaign for the eradication of brucel-

Annual Banquet

Over 1,200 attended the annual banquet, held in the palatial Scottish Rite Cathedral. At the speakers' table pictured above were (front row, left to right) Mrs. T. A. Sigler, Mrs. D. M. Campbell, M. Jacob, Mrs. J. R. Mohler, G. E. Botkin, Mrs. G. W. Gillie, L. A. Merillat, G. W. Gillie, Mrs. J. S. Healy, J. R. Mohler, Mrs. Adolph Eichhorn, I. E. Newsom, Adolph Eichhorn, T. A. Sigler; (back row, left to right) Mrs. A. E. Cameron, H. W. Jakeman, Mrs. E. S. Hinkle, J. C. Schoenlaub, Mrs. Wm. Moore, J. L. Axby, Mrs. J. G. Hardenbergh, Mr. Spencer, Toastmaster J. S. Healy, A. E. Wight, Mrs. J. C. Schoenlaub, E. S. Hinkle, Mrs. J. L. Axby, J. G. Hardenbergh, Mrs. G. E. Botkin, A. E. Cameron.

losis (Bang's disease) in cattle is moving forward. Since February 1, 1940, when the practice of declaring counties as practically free from Bang's disease was inaugurated, 391 counties, located in 23 states, have been officially designated as modified accredited Bang's disease-free areas.

In the campaign against Bang's disease the test-and-slaughter method was adopted some seven years ago to serve an emergency purpose. Since then the method has been continued and today is broadly accepted. Judged by the results obtained, the satisfaction expressed by owners of large herds and the size of the waiting lists, the method has been effective.

In the meantime interest has been aroused in the possibilities of vaccination, particularly calfhood vaccination, as an additional means of combating this malady. The encouraging nature of the results obtained in the vaccination of calves under farm conditions and in controlled experiments during recent years has provided stimulus to this interest. Since December 1940, calfhood vaccination has been used as an adjunct to the regular plan in several states. Plans for such a procedure now exist in 36 states and operate under official supervision.

Brucellosis is now recognized as a major disease problem in human beings, since man readily contracts the disease from infected animals. Because it is an animal-borne affection, veterinarians have as much interest in human brucellosis as those persons directly concerned with human health problems. As a means of improving the economic position of the herd owner and controlling the spread of the disease to human beings, it is imperative that programs of research and eradication be carried forward at a pace at least equal to that of the past several years.

POULTRY DISEASES

One of the widest fields for the further conquest of animal diseases lies in the poultry industry. The industry earns an annual income of a billion dollars, second only to the dairy industry, and it is growing year by year. Its losses from disease are staggering and command our attention.

Research on poultry diseases is steadily broadening in scope and is scoring notable successes. There is no question but that the veterinarian can be as important a factor in the poultry industry as in any other branch of animal husbandry. The chief problems seem to be to dissipate the belief of many poultrymen that the veterinarian is not interested in poultry and to awaken

veterinarians to the opportunities in this field.

SIGNIFICANT STRIDES MADE IN DOG-FOOD-TESTING PROGRAM

There has been considerable activity during the past year in connection with the program on the testing of dog foods which this association has undertaken in coöperation with the American Animal Hospital Association. The thanks of our association are due to those of its members who have devoted unstinted time and effort to the promotion of this worthwhile project, whereby a seal of approval is issued to dog-food manufacturers whose foods pass rigid scientific tests.

As a result of the recommendations of a special committee of the Executive Board, a number of changes have been made in the details of the program since our meeting in Washington last year. Other changes have been incorporated as a result of conferences with manufacturers and other interested groups. A new contract and complete set of rules and regulations have been prepared and approved, covering the inspection of plants and ingredients, advertising claims, label copy, methods of assay, the purpose of the program and conditions under which the seal is granted. All this has involved a great deal of work in collaboration with legal counsel.

The program is still young and further changes undoubtedly will be made from time to time as the need for them becomes apparent. The program is, however, fundamentally sound and is steadily attracting increased support from manufacturers. Ten major dog foods—including those of some of the larger manufacturers—have either been awarded the seal or are now being tested. This is an increase of more than 100 per cent since the Washington meeting.

Information about the testing program has been presented to the profession through the veterinary journals and through papers read at our annual meetings and meetings of state associations, over a period of 4½ years. Greater interest and progress have been shown during the past twelve months than during any other period. This is a striking example of the manner in which a worthwhile educational program of this nature gains momentum.

It should be kept in mind that the program closely affects the interests of a large industry representing the investment of many millions of dollars. A significant action taken by the present holders of the seal, and those in the process of obtaining it, has been that of voluntarily increasing the amount of money contributed by each to provide for better supervision and greater promotional effort.

A word of caution in connection with the program may be timely. The approval of a dog food signifies that by means of chemical analysis, biological assay, practical feeding tests and inspections, investigators have determined that the food is true to label, that it is adequate for growth and sustenance, and that it is prepared with wholesome ingredients in a sanitary plant.

The seal does not mean that an approved food may be fed satisfactorily to any and all types of dogs, under any and all circumstances. The feeding of the normal dog—varying from the apartment lap dog, getting little or no exercise, to the hunting or working dog—demands a considerable variation in diet, in a manner analogous to the difference between a satisfactory diet for the office worker of sedentary habits, and one that will meet the requirements of a laborer whose days are spent in physical activity.

A misunderstanding of the significance of the seal may lead to disappointment. In addition to looking for the seal, the veterinarian should use his professional knowledge of nutrition and disease in connection with all feeding problems. The all-important point is that when a veterinarian uses or recommends a commercially prepared dog food, he can assure a wholesome diet and enhance the prestige of his profession by recommending a food that bears the seal of approval.

THE STATUS OF VETERINARIANS IN PUBLIC SERVICE

A large proportion of the members of our profession, including those in the Army,

are in federal or state employ. In view of the importance of the service they render, it seems that in many instances their compensation is inadequate. As far as the Army is concerned, the rank of the head of the Veterinary Corps should unquestionably be higher, and it is my belief that there is justification also for a general increase in the rank of veterinary officers, because of the increasing scope and importance of their duties.

That the compensation of veterinarians in public employ is often distinctly meager is due basically to the public's lack of understanding of the part our profession plays in safeguarding both animal and human health. The public knows that the properly inspected meat it buys is prepared from healthy animals under sanitary conditions, that milk is among the safest of foods and that many diseases transmitted from animals to man have been stamped out or are being controlled. Generally speaking, however, the public is still not alive to the fact that much credit for all of this is due the veterinary profession.

To cite but a single instance, the hunchback is rapidly vanishing in this country. Today we see very few of these unfortunate cripples under the age of 20. The condition, a permanent malformation of the bones, was usually due to tuberculosis transmitted to children through the milk of affected cows. The campaign of systematic testing, inaugurated in 1917 by veterinarians, has eliminated tuberculosis from most of the nation's dairy herds, and this, together with effective pasteurization, has done away with malformation of the bones of children from this cause.

PUBLICITY

Much favorable publicity for our profession has been gained through the press and the radio, and one of the tasks before our organization is to continue to devise means whereby the daily press, periodicals, radio and motion pictures may be utilized to an increasing extent to inform the public of the contributions to human and animal health which have been and are being made by the veterinary profession. There is no other way by which the public can be given a true understanding of what it owes the veterinarian. Our annual meetings are of major importance in this connection, for due to the national publicity they receive, the story of veterinary service is told to the public by persons who have made their mark in the various branches of the profession.

The various journals on veterinary medicine besides the ones published by our association contain much important information regarding our profession which receives wide distribution. They record the achievements of our profession and the policies that determine its progress. They keep us acquainted with what our colleagues are accomplishing, and they tell the world what we as a profession are accomplishing.

HONOR ROLL OF THE SEVENTY-EIGHTH ANNUAL MEETING

This session will, I am certain, set a new record for the interest and value of its proceedings, and reflect the unusual activity and progress of the past year. Dr. Axby, chairman of the Committee on Local Arrangements, and all the members of his committee, have worked long and hard to make this meeting a pleasant and memorable occasion. Our most heartfelt thanks are due to them for their efforts.

Tangible evidence of the work of two of the committees—those on technical and educational exhibits—is prominently displayed in the exhibit hall. All of you who have seen the exhibits, as I am sure most of you have, will agree that the members of these committees should be congratulated for assembling the largest and most varied aggregation ever shown at one of our annual meetings. It is hardly necessary for me to say that we are grateful to those sponsoring the exhibits for their contribution to the scope and interest of our meeting.

The same thanks are due to all members of the other committees who will report on their activities at this meeting. The time and effort unselfishly devoted by them can be repaid only by the knowledge that

their work is a major contribution to the progress of our profession.

We owe a sincere vote of thanks also to the members of the Women's Auxiliary. No annual meeting would be complete or enjoyable without the ladies of the Auxiliary. No year in the history of our Association could be considered a year of progress while lacking their support.

I also wish to express my full appreciation of the great honor bestowed upon me. I fully realize that my election to the high office of president was made possible only through my connection with the U. S. Bureau of Animal Industry for a long period of years. My duties have made it possible for me to become well acquainted with a large number of veterinarians throughout the country. I am grateful to my many friends among veterinarians, both in and outside the Bureau, and extend greetings to those who for some reason can not be with us at this convention.

Four members of the Bureau were president of this association prior to my inauguration last year. Only one of them is living today. He is John R. Mohler, chief of that bureau. I know of no one person who has contributed more to the welfare of our association than this internationally known veterinarian. May he continue to be able to aid our association and attend many more of our conventions.

PAN-AMERICAN VETERINARY CONGRESS IN 1943 PROPOSED

Before closing, there is one thought I would like to leave with you. During the past few years an earnest effort has been made to bring closer together the nations of the Western Hemisphere. In a world torn by war, unity of purpose on the part of the nations of the new world and appreciation of each other's contributions to the progress of civilization provide certain hope for a better world when this terrible war is ended—as it must be some day.

The members of our profession, whether they live north or south of the Rio Grande, have a common function and common ideals of service to the animal and human world. I would like to suggest that our profession could make a major contribution to closer relations between the American nations by holding a Pan-American veterinary congress in connection with our annual meeting in 1943.

Force vs. Persuasion in Disease Control

A public health official* long experienced in disease control among backward people once remarked that doing things for people is often easy, but it is often expensive and of temporary benefit, whereas showing people how to do things for themselves may take a little more time, but is inexpensive and its results are lasting.

That philosophy underlies the success of livestock sanitation in the United States, where the first step in any important disease-control project is persuading the livestock industry and the general public as to its needs, its advantages and the details of its *modus operandi*. Otherwise told, persuasion through education, not through the power of government, is the strategy that has made the American system victorious in its major operation against animal diseases. The weakness of disease fighting without the consent of the people is self-evident. If, as has been so often said, "The United States is the safest place in the world to raise livestock," that praise was not won by compulsion.

That medical students should not be inducted into the military service, or even permitted to volunteer, was emphasized by President Lahey of the American Medical Association. There should be no bottleneck in the production of doctors and nurses, he warned.

Never in history has there been such a vital need for a better knowledge of the nutritive value of foods, their selection and preparation—to the end that America may be better fed.—*R. C. Pollock, National Livestock and Meat Board.*

---

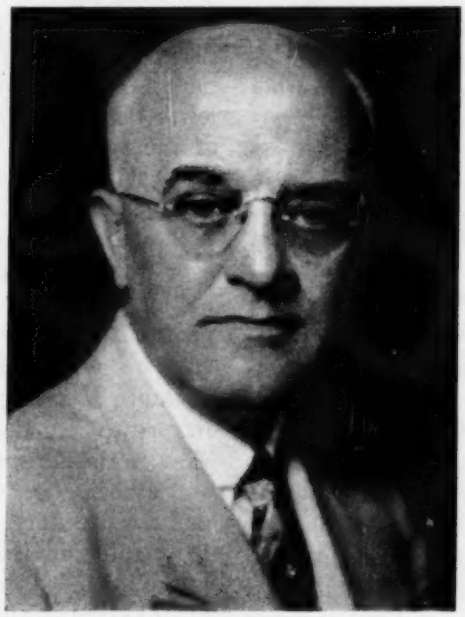
*Hydrick, J. L., M.D., Dutch East Indies, cited by Community Organization for Health Education, New York, 1941.

Annual Luncheon of the Women's Auxiliary

The Indianapolis Athletic Club was the scene of this annual affair of the Auxiliary. Seated at the speakers' table (inset) are (left to right) Mrs. D. D. Baker, Wabash, Ind.; Mrs. Guy Graham, Kansas City, Mo.; Mrs. J. C. Schoenlaub, Indianapolis, chairman of the ladies' entertainment committee for the meeting; Mrs. W. H. Ivens, Philadelphia; Mrs. William Moore, Raleigh, N. Car., president of the Auxiliary; Mrs. Earl Moore, Morgantown, W. Va.; Mrs. Julia Bock Harwood, Decatur, Ill., guest speaker; Mrs. J. L. Axby, Indianapolis; and Mrs. G. E. Bettin, Marion, Ind.

The New President

EARNEST, MODEST, tranquil, keen-minded and fatherly are among the first words coming to mind in starting a biographic study of our sixty-fourth president. In fact, the biography of H(arry) W. Jakeman (U. P. '09), written to edify his colleagues, would need no proem but for his retiring disposition. Although the chief executive whom the Association inaugurated at Indianapolis on August 14 rose to the top without fanfare, more than 30 years of tireless work and wise counsel in behalf of the veterinary profession of the United States and Canada are strewn with evidence of his influence.



H. W. Jakeman

Born in Halifax, Nova Scotia (1885), son of William Jakeman, D.V.S. (McG. '79), and brother of Walter Jakeman, M.D.V. (Harv. '96), the new president inherited the historic background now required for wise generalship in the veterinary affairs of North America. His domestic *entourage* is (1) Mrs. H. W. Jakeman (*née* Anna Carter) to whom he was married in 1909; (2) Lieut. Wm. C. Jakeman of the U. S. Naval Air Service with station at the Naval Air Base, Canal Zone; and (3) Miss Betty Jakeman, graduate of Radcliffe, trustworthy *attaché* of the Mutual Insurance Company of Boston.

Then, it is no strain on the truth to say that President Jakeman's educational qualifications are noteworthy, namely: Halifax High School, 4 years; Mount Allison University, 4 years*; School of Veterinary Medicine, University of Pennsylvania, 3 years; graduate work in pathology and bacteriology in Germany, France and England, 2 years; and assistant to Professor Yoest of Dresden, 6 months. Needless to point out, the sum of these steps was a notable preparation for the veterinary career he had chosen.

His professional life, now the cynosure of all eyes, escaped the limelight through many years of faithful plodding. It comprises: (1) Five years in general practice at Westminster, British Columbia, during which he was bacteriologist for that city and for the World War encampment of that region; (2) five years as state pathologist and diagnostician, University of Nevada; (3) five years as senior bacteriologist and associate director, Pitman-Moore biological laboratories, Indianapolis; and (4) 19 years, manager, consultant and diagnostician of the New England district for that pioneer veterinary laboratory. It was through the association with his classmate, E. A. Cahill, now president of Allied Laboratories, Inc., that President Jakeman was drafted into the position he now occupies.

Celebrated as the integration of these credits may seem, it is after all his faith and steadfast interest in organized veterinary medicine that led slowly but surely to the presidency of the national association of the two countries in which he labored. It was a case of merit will out—of work well done without thought of personal reward. Witness:

1) Secretary, British Columbia Veterinary Medical Association, 5 years.

*Owing to a grave accident in football during his senior year, Dr. Jakeman was not able to complete his baccalaureate course.

2) Secretary-treasurer, Massachusetts Veterinary Medical Association, 12 years.

3) Founder of the New England Veterinary Medical Association; secretary-treasurer, 13 years.

4) Member, Executive Board, American Veterinary Medical Association, 8 years.*

5) Chairman, *ibid.*, 3 years.

6) Member, Board of Governors, *ibid.*, 5 years.

7) President-elect, *ibid.*, 1 year.

During his tenure on the Executive Board, President Jakeman was a staunch advocate of reorganizing the operations of the Association, particularly in regard to forming an active executive staff (Board of Governors) to manage administration throughout the year—a step, too long postponed, which was instrumental in increasing the affluence and membership the Association now enjoys. Among numerous escutcheons in the life of Harry Jakeman that are unknown to even his closest friends may be mentioned:

1) Football, Mount Allison University.

2) 1st violinist and maestro of a symphony orchestra.

3) Captain of the All-Germany Hockey Team at the International Hockey Tournament in Switzerland, during his graduate sojourn in Europe.

4) Holder of loving cups, gold medals and other trophies for gymnastics.

So silent has the testator been through all these years of milling with the crowd that one feels constrained to append an affidavit to ratify the story of his colorful life.

What sort of a chap is Jakeman? The answer may be summed up in a few words. His are the traits of a stern master and kind father. So perish the thought that his retiring ways spell anything but discipline within his command and religious devotion to the welfare of the profession he was elected to promote. Again, the AVMA in choosing its chief executive has chosen well.

*Resigned during his second five-year term on being elected to the office of president-elect at Washington, D. C., 1940.

The American Patriot

Democracies flourish because their people are free to maintain service organizations where the government can go for knowledge and guidance when needed. Only a few in the professions do not know or admit that such is the case, that the service associations permitted and encouraged by the national and state governments created and named their vocation and maintain it for them to work in.

Happily for the USA the number of professionals who do not participate in service association work is vanishing and is now too small to block the scientific progress they ride on free-of-charge, and fortunately not numerous enough, in our case, to lower the public's opinion of the importance of the veterinary service or to affect, unfavorably, the call to arms in national emergencies.

In short, the American patriot is the one ever ready and qualified to come to the aid of his country, a thing impossible in professional life except by marching along with his peers. Never was the national importance of society work better shown than in presenting the veterinary profession's view on the deferment of veterinary doctors and students under the Selective Training and Service Act. The Association was able to register advice of great value that was appreciated by the functionaries in charge of that important mission, thanks to the membership. True patriotism in the United States—government of the people as the statesmen say—starts with absolute loyalty to the work our freedom permits the citizen to do. Shirking in that is shirking in fact, because in entering a profession and practicing under the protection of laws, it is the implied obligation that insures the perpetuity of the freedom enjoyed.

Summed up, the American patriot is the man who works with his colleagues in the societies of his vocation. There is presumption in claiming the title of patriot without helping the governments of town, state and nation through the might of organization.

Organization of the American Veterinary Medical Association, 1941-1942

Officers

H. W. Jakeman, *President*, 44 Bromfield St., Boston, Mass.
W. W. Dimock, *President-Elect*, University of Kentucky, Lexington, Ky.
S. E. Hershey, *1st Vice-President*, Charleston, W. Va.
Jacob Traum, *2nd Vice-President*, University of California, Berkeley, Calif.
Mason Weadon, *3rd Vice-President*, 2119 15th St., N. W., Washington, D. C.
B. T. Simms, *4th Vice-President*, Animal Disease Research Laboratory, Auburn, Ala.
Wm. Moynihan, *5th Vice-President*, 366 Keele St., Toronto, Ont.
J. G. Hardenbergh, *Executive Secretary*, 600 S. Michigan Ave., Chicago, Ill.
M. Jacob, *Treasurer*, University of Tennessee, Knoxville, Tenn.

Executive Board

O. V. Brumley, *Chairman*, The Ohio State University, Columbus, Ohio.
A. E. Cameron, *1st District*, 231 Sunnyside Ave., Ottawa, Ont.
R. A. Hendershott, *2nd District*, 33 Oak Lane Ave., Trenton, N. J.
J. L. Axby, *3rd District*, 209 State House, Indianapolis, Ind.
W. E. Cotton, *4th District*, Alabama Polytechnic Institute, Auburn, Ala.
F. M. Wilson, *5th District*, Mechanicsville, Iowa.
W. L. Curtis, *6th District*, 1264 W. 2nd St., Los Angeles, Calif.
Chas. H. Seagraves, *7th District*, 1514 Washington St., Oregon City, Ore.
Ashe Lockhart, *8th District*, 800 Woodswether Road, Kansas City, Mo.
Edwin Laitinen, *9th District*, 993 N. Main St., Hartford, Conn.
O. V. Brumley, *10th District*.
C. W. Bower, Member-at-Large, 1128 Kansas Ave., Topeka, Kan.
H. W. Jakeman, *ex-officio*.
W. W. Dimock, *ex-officio*.

Board of Governors (Ex-Officio)

O. V. Brumley, *Chairman;* H. W. Jakeman; W. W. Dimock.

Editorial Staff

L. A. Merillat, J. G. Hardenbergh, *Editors;* J. J. Shaffer, *Assistant to the Editors.*

Associate Editors

J. R. Beach, *Poultry Diseases*, University of California, Davis, Calif.
E. A. Benbrook, *Parasitology*, Iowa State College, Ames, Iowa.
R. R. Birch, *Research*, Cornell University, Ithaca, N. Y.
John B. Bryant, *Swine Practice*, Mt. Vernon, Iowa.
J. A. Campbell, *Diseases of Captive Wild Animals*, 2722 Yonge St., Toronto, Ont.
C. H. Case, *Cattle Practice*, 50 E. Buchtel Ave., Akron, Ohio.
James Farquharson, *Large Animal Medicine*, Colorado State College, Fort Collins, Colo.
Ward Giltner, *Public Health*, Michigan State College, East Lansing, Mich.
W. F. Guard, *Surgery and Obstetrics*, The Ohio State University, Columbus, Ohio.
R. A. Kelser, *Military Veterinary Medicine*, Office of the Surgeon General, U. S. Army, Washington, D. C.
J. A. S. Millar, *Small Animal Medicine*, Deal, N. J.
John R. Mohler, *Sanitary Science*, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.
J. E. Shillinger, *Diseases of Wildlife and Fur-Bearing Animals*, Fish and Wildlife Service, Department of the Interior, Washington, D. C.

Section Officers*

GENERAL PRACTICE.—I. S. McAdory, *Chairman*, Alabama Polytechnic Institute, Auburn, Ala.; L. O. Henrich, *Secretary*, Tulare, Calif.

SANITARY SCIENCE AND FOOD HYGIENE.—L. G. Cloud, *Chairman*, Box 222, Fort Worth Texas; W. T. Spencer, *Secretary*, 1250 N. 37th St., Lincoln, Neb.

RESEARCH.—C. K. Mingle, *Chairman*, 4705 Fordham Road, College Park, Md.; O. W. Schalm, *Secretary*, University of California, Berkeley, Calif.

SMALL ANIMALS.—Roy E. Nichols, *Chairman*, Purdue University, Lafayette, Ind.; E. C. Jones, *Secretary*, 9088 Santa Monica Blvd., Los Angeles, Calif.

POULTRY.—F. R. Beaudette, *Chairman*, New Jersey Agricultural Experiment Station, New Brunswick, N. J.; E. M. Dickinson, *Secretary*, Oregon State College, Corvallis, Ore.

SURGERY AND OBSTETRICS.—James Farquharson, *Chairman*, Colorado State College, Fort Collins, Colo.; E. E. Wegner, *Secretary*, State College of Washington, Pullman, Wash.

*These officers also constitute the Committee on Program, with the executive secretary as chairman, *ex-officio*.

Standing Committees

*Budget (Ex-Officio)**

H. W. Jakeman, *Chairman*, 44 Bromfield St., Boston, Mass.
S. E. Hershey, Charleston, W. Va.
J. G. Hardenbergh, 600 S. Michigan Ave., Chicago, Ill.
M. Jacob, University of Tennessee, Knoxville, Tenn.
O. V. Brumley, The Ohio State University, Columbus, Ohio.

*Pursuant to article XII, section 1, part 1, paragraph a, of the Administrative By-Laws.

Education

N. S. Mayo, *Chairman*, 484 Sheridan Place, Highland Park, Ill. (1942)
W. A. Hagan, Cornell University, Ithaca, N. Y. (1943)
E. T. Hallman, Michigan State College, East Lansing, Mich. (1946)
L. H. Hurt, 721 W. Orange Grove Ave., Sierra Madre, Calif. (1945)
C. D. McGilvray, Ontario Veterinary College, Guelph, Ont. (1944)

Legislation

J. G. Hardenbergh, *Chairman*,* 600 S. Michigan Ave., Chicago, Ill.
E. M. Gildow, Carnation Milk Farms, Carnation, Wash. (1946)
George W. Gillie, 434 House Office Bldg., Washington, D. C. (1945)
Reuben Hilty, 624 Huron St., Toledo, Ohio (1943)
W. H. Ivens, 5328 Haverford Ave., Philadelphia, Pa. (1944)

*Pursuant to article XII, section 1, part 3, paragraph a, of the Administrative By-Laws.

*Program (Ex-Officio)**

This committee is composed of the chairmen and secretaries of the six sections, with the executive secretary acting as the chairman.

*Pursuant to article XII, section 1, part 4, of the Administrative By-Laws, as amended at the seventy-eighth annual meeting.

Resolutions

J. R. Currey, *Chairman*, 5313 Wisconsin Ave., N. W., Washington, D. C.
J. G. Hardenbergh, *Secretary, ex-officio*, 600 S. Michigan Ave., Chicago, Ill.
A. J. DeFosset, Box 416, Columbus, Ohio.
E. P. Flower, Box 24, Baton Rouge, La.
John H. Gillmann, 769 Vance Ave., Memphis, Tenn.
Wm. Moore, Department of Agriculture, Raleigh, N. Car.
J. L. Tyler, 409 E. Hadley St., Whittier, Calif.
C. P. Zepp, 136 W. 53rd St., New York, N. Y.

Biological Products

Hadleigh Marsh, *Chairman*, Veterinary Research Laboratory, Bozeman, Mont. (1943)
J. G. Hardenbergh, *Secretary, ex-officio*, 600 S. Michigan Ave., Chicago, Ill.
C. C. Dobson, New Augusta, Ind. (1945)
W. S. Gochenour, 410 E. 56th St., Indianapolis, Ind. (1946)
F. A. Imler, 19 Federal Bldg., Kansas City, Kan. (1942)
Harrie W. Peirce, 22 Gleason St., West Medford, Mass. (1944)

Proprietary Pharmaceuticals

R. S. Amadon, *Chairman*, University of Pennsylvania, Philadelphia, Pa. (1946)
J. G. Hardenbergh, *Secretary, ex-officio*, 600 S. Michigan Ave., Chicago, Ill.
Harry Caldwell, Wheaton, Ill. (1942)
J. V. Lacroix, Box 550, Evanston, Ill. (1944)
H. E. Moskey, Food and Drug Administration, Washington, D. C. (1943)
R. L. Mundhenk, Lederle Laboratories, Pearl River, N. Y. (1945)

Public Relations

Clifton D. Lowe, *Chairman*, 3429 Oakwood Terrace, N. W., Washington, D. C. (1946)
J. G. Hardenbergh, *Secretary, ex-officio*, 600 S. Michigan Ave., Chicago, Ill.
C. F. Schlotthauer, The Mayo Foundation, Rochester, Minn. (1943)
E. C. W. Schubel, Blissfield, Mich. (1942)
Cassius Way, 25 Vanderbilt Ave., New York, N. Y. (1945)
Mark Welsh, College Park, Md. (1944)

Special Committees

History

L. A. Merillat, *Chairman*, 600 S. Michigan Ave., Chicago, Ill.
Bert W. Bierer, Joppa Road and Clement Ave., Towson, Md.
George H. Glover, 1015 West Mountain, Fort Collins, Colo.
Loenard W. Goss, The Ohio State University, Columbus, Ohio.
C. M. Haring, University of California, Berkeley, Calif.
R. S. MacKellar, 329 W. 12th St., New York, N. Y.

Rabies

R. A. Kelser, *Chairman*, Office of the Surgeon General, U. S. Army, Washington, D. C.
L. G. Clark, 1712 Beverly Blvd., Los Angeles, Calif.
C. E. Cotton, 3145 Portland Ave., Minneapolis, Minn.
John H. Gillmann, 769 Vance Ave., Memphis, Tenn.
W. A. Hagan, Cornell University, Ithaca, N. Y.
J. V. Lacroix, Box 550, Evanston, Ill.

H. W. Schoening, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Nomenclature of Diseases and Vital Statistics

H. C. H. Kernkamp, *Chairman*, University Farm, St. Paul, Minn.

F. R. Beaudette, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

M. A. Emmerson, University of Pennsylvania, Philadelphia, Pa.

W. H. Feldman, The Mayo Foundation, Rochester, Minn.

George H. Hart, University Farm, Davis, Calif.

I. A. Merchant, Iowa State College, Ames, Iowa.

H. W. Schoening, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Benj. Schwartz,* Zoölogical Division, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Frank Thorp, Jr., Michigan Agricultural Experiment Station, East Lansing, Mich.

E. A. Watson, Animal Disease Station, Hull, Que.

*Consulting member.

Parasitology

D. W. Baker, *Chairman*, Cornell University, Ithaca, N. Y.

G. Dikmans, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

R. E. Rebrassier, The Ohio State University, Columbus, Ohio.

J. N. Shaw, Oregon State College, Corvallis, Ore.

B. T. Simms, Animal Disease Research Laboratory, Auburn, Ala.

H. L. Van Volkenberg, Texas A & M College, College Station, Texas.

J. H. Whitlock, Kansas State College, Manhattan, Kan.

Poultry Diseases

Cliff D. Carpenter, *Chairman*, 717 Davis St., Fort Wayne, Ind.

F. R. Beaudette, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

C. A. Brandly, Regional Poultry Research Laboratory, East Lansing, Mich.

T. M. De Vries, 3400 Broad Ave., Altoona, Pa.

E. M. Dickinson, Oregon State College, Corvallis, Ore.

K. W. Stouder, 615 Kellogg Ave., Ames, Iowa.

Frank Tucker, Claypool, Ind.

Food Hygiene

M. B. Starnes, *Chairman*, Health Department, Dallas, Texas.

W. C. Herrold, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

A. F. Schalk, The Ohio State University, Columbus, Ohio.

W. T. Spencer, 1250 N. 37th St., Lincoln, Neb.

F. E. Smith, 4801 Evanston Ave., Seattle, Wash.

R. F. Vermilya, Wilson & Co., 41st & S. Ashland Ave., Chicago, Ill.

Bang's Disease

R. R. Birch, *Chairman*, Route 2, Ithaca, N. Y.

Adolph Eichhorn, Animal Disease Station, Beltsville, Md.

Chas. P. Bishop, 217 Forster St., Harrisburg, Pa.

Hugh S. Cameron, University Farm, Davis, Calif.

C. R. Donham, Purdue University, W. Lafayette, Ind.

R. A. Hendershott, 33 Oak Lane Ave., Trenton, N. J.

W. Wisnicky, University of Wisconsin, Madison, Wis.

Interstate Shipment of Livestock by Truck

J. L. Axby, *Chairman*, State Veterinarian, Indianapolis, Ind.

H. E. Curry, State Veterinarian, Jefferson City, Mo.

C. E. Fidler, Chief Veterinarian, Springfield, Ill.

H. A. Seidell, State Veterinarian, Des Moines, Iowa.

Twelfth International Veterinary Congress Prize

H. W. Jakeman, *Chairman*, 44 Bromfield St., Boston, Mass.

O. V. Brumley, The Ohio State University, Columbus, Ohio.

W. W. Dimock, University of Kentucky, Lexington, Ky.

R. A. Kelser, Office of the Surgeon General, U. S. Army, Washington, D. C.

John R. Mohler, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Local Arrangements for San Francisco, Calif., Meeting, 1942

J. M. Arburua, *Chairman*, 26 Fell St., San Francisco.

Nelson E. Clemens, 183 Castro St., Hayward.

C. M. Haring, College of Agriculture, University of California, Berkeley.

L. M. Hurt, 721 W. Orange Grove Ave., Sierra Madre.

Eugene C. Jones, 9088 Santa Monica Blvd., Los Angeles.

C. J. Parshall, 319 B. St., Petaluma.

George M. Simmons, 1386 Golden Gate Ave., San Francisco.

(Additional members of this committee are to be appointed.)

Veterinary Participation in National Defense

Wm. Moore, *Chairman*, Department of Agriculture, Raleigh, N. Car.
E. A. Cahill, Box 44, Kansas City, Mo.
S. O. Fladness, 2312 S. Joyce St., Arlington, Va.
Reuben Hilty, 624 Huron St., Toledo, Ohio.
L. M. Hurt, 721 W. Orange Grove Ave., Sierra Madre, Calif.
Louis A. Klein, University of Pennsylvania, Philadelphia, Pa.
R. S. MacKellar, 329 W. Twelfth St., New York, N. Y.
L. A. Merillat, 600 S. Michigan Ave., Chicago, Ill.
A. F. Schalk, The Ohio State University, Columbus, Ohio.
C. H. Seagraves, 1514 Washington St., Oregon City, Ore.
R. F. Vermilya, Wilson & Co., 41st and S. Ashland Ave., Chicago, Ill.

*Joint Committee on Foods**

J. G. Hardenbergh, *Chairman*, 600 S. Michigan Ave., Chicago, Ill. (AVMA)
C. W. Bower, 1128 Kansas Ave., Topeka, Kan. (AAHA)
O. V. Brumley, The Ohio State University, Columbus, Ohio (AVMA)
S. W. Haigler, 7645 Delmar Blvd., St. Louis, Mo. (AAHA)
A. E. Wight, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

*As approved by the respective associations, the newly formed Joint Committee on Foods comprises two members representing the American Animal Hospital Association, two representing the American Veterinary Medical Association, and a fifth member elected by the other members.

Sub-Committee on Veterinary Items National Formulary Committee (Ten-Year Appointment)

H. D. Bergman, *Chairman*, Iowa State College, Ames, Iowa.
R. F. Bourne, Colorado State College, Fort Collins, Colo.
P. W. Burns, A & M College of Texas, College Station, Texas.
C. F. Cairy, Michigan State College, East Lansing, Mich.

Representatives

National Research Council.—Adolph Eichhorn, Animal Disease Station, Beltsville, Md., to serve from 1941 through 1944.
Advisory Board, Horse and Mule Association of America.—T. A. Sigler, Greencastle, Ind., annual assignment.
American Association for the Advancement of Science.—Ward Giltner, Michigan State College, East Lansing, Mich., annual assignment.
United States Pharmacopoeial Convention, XII.—R. L. Mundhenk, Lederle Laboratories, Pearl River, N. Y., and H. E. Moskey, Food and Drug Administration, Washington, D. C., to serve until 1950.

Resident State Secretaries

Alabama.—E. S. Winters, Alabama Polytechnic Institute, Auburn, Ala.
Arizona.—L. N. Butler, Jr., 2916 N. 15th Ave., Phoenix.
Arkansas.—C. D. Stubbs, Globe Laboratories, 219 W. 3rd St., Little Rock.
California.—J. L. Tyler, 209 E. Hadley St., Whittier.
Colorado.—G. G. Miller, Sr., 1321 S. Broadway, Denver.
Connecticut.—George E. Corwin, 285 State Office Bldg., Hartford.
Delaware.—C. C. Palmer, University of Delaware, Newark.
District of Columbia.—W. M. Mohler, 5508 Nebraska Ave., N. W., Washington.
Florida.—M. W. Emmel, University of Florida, Gainesville.
Georgia.—Chas. C. Rife, 420 Edgewood Ave., S. E., Atlanta.
Idaho.—A. K. Kuttler, 312 Federal Bldg., Boise.
Illinois.—J. G. Blum, 408 S. Main St., Normal.
Indiana.—J. C. Schoenlaub, Box 1233, Indianapolis.
Iowa.—A. H. Quin, 313 49th St. Place, Des Moines.
Kansas.—E. J. Frick, Kansas State College, Manhattan.
Kentucky.—D. L. Proctor, 617 Price Ave., Lexington.
Louisiana.—W. T. Oglesby, Louisiana State University, Baton Rouge.
Maine.—S. W. Stiles, Falmouth Foreside.
Maryland.—C. L. Everson, Livestock Sanitary Service Laboratory, College Park.
Massachusetts.—L. A. Paquin, Box 225, Webster.
Michigan—C. F. Clark, 1100 Burcham Drive, East Lansing.
Minnesota.—John N. Campbell, 923 East Blue Earth Ave., Fairmont.
Mississippi.—W. L. Gates, Box 417, Clarksdale.
Missouri.—Wayne S. O'Neal, Box 95, St. Charles.
Montana.—E. A. Tunnicliff, Montana Veterinary Research Laboratory, Bozeman.
Nebraska.—J. E. Weinman, 2525 O St., Lincoln.
Nevada.—Edward Records, University of Nevada, Reno.
New Hampshire.—Carl E. Chase, 1153 Hanover St., Manchester.
New Jersey.—J. R. Porteus, Box 938, Trenton, N. J.
New Mexico.—H. C. Schipman, 644 Court St., Las Cruces.
New York.—L. W. Goodman, 2303 Northern Blvd., Manhasset, L. I.

North Carolina.—J. H. Brown, Tarboro.
North Dakota.—Frederik Low, Box 348, Oakes.
Ohio.—W. F. Guard, The Ohio State University, Columbus.
Oklahoma.—H. W. Schmees, 46th and Lincoln Blvd., Oklahoma City.
Oregon.—Chas. H. Seagraves, 1514 Washington St., Oregon City.
Pennsylvania.—W. H. Ivens, Sr., 5328 Haverford Road, Philadelphia.
Rhode Island.—J. S. Barber, 560 Pleasant St., Pawtucket.
South Carolina.—W. A. Barnette, Greenwood.
South Dakota.—Nelson J. Mayer, Mitchell.
Tennessee.—John H. Gillmann, 769 Vance Ave., Memphis.
Texas.—Hubert Schmidt, College Station.
Utah.—Jean C. Flint, 1307 S. State St., Salt Lake City.
Vermont.—G. N. Welch, 43 Union St., Northfield.
Virginia.—A. J. Sipos, 1102 State Office Bldg., Richmond.
Washington.—R. A. Button, 2909 S. M St., Tacoma.
West Virginia.—S. E. Hershey, Box 283, Charleston.
Wisconsin.—J. S. Healy, 330 Federal Bldg., Madison.
Wyoming.—F. H. Melvin, 403 Federal Bldg., Cheyenne.

Resident Territorial Secretaries

Alaska.—J. B. Loftus, Petersburg Experiment Station, Petersburg.
Canal Zone—T. L. Casserly, Box 3035, Cristobal.
Hawaii.—Ernest H. Willers, Kapiolani Blvd. at Sheridan, Honolulu.
Puerto Rico.—Abelardo Garcia Bird, Box 7, Fajardo.
Virgin Islands.—Gordon C. Kendall, U. S. Department of Interior, Christiansted, St. Croix.

Resident Provincial Secretaries

Alberta.—J. C. Hargrave, 156 N. E. 3rd St., Medicine Hat.
British Columbia.—James G. Jervis, Milner.
Manitoba.—R. H. Lay, 613 Dominion Republic Bldg., Winnipeg.
New Brunswick.—T. Fred Johnston, 117 Leinster St., St. John.
Nova Scotia.—George Townsend, Box 76, New Glasgow.
Ontario.—W. Moynihan, 366 Keele St., Toronto.
Quebec.—J. S. Jasmin, 12361 Chevalier St., Montreal.
Saskatchewan.—Norman Wright, 137 20th St., W., Saskatoon.

Foreign Corresponding Secretaries

Argentina.—Willy Rucks, Valle 1314, Buenos Aires.
Bahamas.—C. J. Cooper, Kelton, Pembroke.
Chile.—Julio San Miguel, Casilla 537, Santiago.
Cuba.—R. Lagarde, University of Havana, Havana.
Denmark.—Hans C. Bendixen, Bun Kgl. veterinor-og Lardbozliojskola, Biilovavej 13, Copenhagen.
Dominican Republic.—G. A. Roberts, Apartado 1311, Ciudad Trujillo.
Ecuador.—Roberto Plata Guerrero, Apartado 468, Guayauil.
Egypt.—J. E. Aghion, 20 Sharia Senan, Pasha, Zeitoun.
England.—G. S. Muir, Greenmount, Needham Market, Ipswich.
Germany.—Prof. Oskar Seifried, Institut für Tierpathologie d. Univ. Veterinarstrasse, 6, Munich.
Hungary.—Alexander Kotlan, Royal Hungarian Veterinary College, Budapest VII.
Jamaica.—Stephen Lockett, Department of Agriculture, Hope, Kingston.
Mexico.—Luis Santa Maria, Apartado Postal No. 2067, Mexico, D. F.
New Zealand.—Wm. C. Ring, P. O. Box 1594, Auckland, C. I.
Peru.—Daniel A. Tovar, Alej Tirado 125, Lima.

Women's Auxiliary

Mrs. Wm. Moore, *President*, Raleigh. N. Car.
Mrs. G. G. Graham, *1st Vice-President*, Kansas City, Mo.
Mrs. John H. Gillmann, *2nd Vice-President*, Memphis, Tenn.
Mrs. Earl N. Moore, *3rd Vice-President*, Morgantown, W. Va.
Mrs. C. D. Lowe, *4th Vice-President*, Washington, D. C.
Mrs. Wm. H. Ivens, *Secretary-Treasurer*, Ardmore, Pa.

A plan is already on foot to run a special train to the 1942 meeting at San Francisco. The object is to make the trip to California a delightful and memorable occasion, and the announcement at this early date is to turn all eyes toward California as the place to spend the 1942 vacation, for, "Lives there a man with soul so dead who never to himself has said, 'I'd like to go to California.'"

The Association has held four outstanding conventions in recent years: New York (1938), Memphis (1939), Washington (1940), and Indianapolis (1941)—events that will long be remembered. They are patterns not easy to duplicate.

ABSTRACTS OF PAPERS PRESENTED AT THE INDIANAPOLIS SESSION AUGUST 11-15, 1941

Treatment of Bovine Mastitis

O. W. SCHALM, D.V.M., Ph.D.

The European literature contains numerous favorable reports on the treatment of chronic streptococcic mastitis by infusion of the udder with certain acridine derivatives. Entozon and neutral acriflavin have given the most encouraging results. The infusion of comparatively large volumes (800 to 1,500 cc.) of aqueous solutions of these compounds has been recommended. Steck, however, concluded that since the infection is usually limited to the teat, gland cisterns and associated large ducts, a large amount of infusion fluid is not necessary. He employed not more than 400 cc. of a concentrated trypaflavin-sucrose solution (neutral acriflavin) for intensive treatment of the cistern region.

In the United States two entirely different products have recently been used against chronic streptococcic mastitis with good results. They are tyrothricin (gramicidin) and colloidal silver oxide (novoxil). The former is an alcohol-soluble, water-insoluble substance isolated from cultures of a Gram-positive bacillus obtained from the soil.

The purpose of our investigation was to determine the efficacy of these various therapeutic agents in the eradication of *Streptococcus agalactiae* from infected udders. Five herds, having a total of approximately 850 mature cows, were included in the study. The infected cows were detected by clinical and bacteriologic methods. Animals found to be shedding *S. agalactiae* were segregated from the remainder of the herd during lactation and were always milked last. No animals were eliminated from the herds as a result of the findings in the preliminary survey; thus, cows in every stage of the disease were available for treatment. The number of cows responding favorably to chemotherapy was found to vary from herd to herd.

Entozon was used in one herd, while a modification of the Steck trypaflavin-sugar method was employed in another. Treatment was not limited to a single method in three other herds, for tyrothricin and novoxil were used as well as the modified Steck method. The results obtained with the different therapeutic agents in the latter three herds showed that of 75 cows treated by the modified Steck method, 44 (58.6%) were cured; of 46 cows treated with tyrothricin, 33 (71.7%) were cured; and of 17 treated with novoxil, 10 (58.8%) were cured.

The following factors were found to influence the effectiveness of chemotherapy: the size of the udder and the degree of its activity, the extent of fibrosis, the intensity of the inflammatory process, and dosage and duration of stay of the therapeutic agent within the udder.

Infections with *S. uberis* and *S. dysgalactiae* responded to treatment at least as well as those caused by *S. agalactiae.* On the other hand, staphylococcic infections of the udder were found to be comparatively resistant to chemotherapy.

Some Observations on the Control of Bovine Mastitis

W. D. POUNDEN, D.V.M., M.S.,
B. A. BEACH, D.V.M., and
E. G. HASTINGS, M.S.

Nineteen herds averaging 29 cows each were examined periodically for mastitis and control programs were instituted in those herds in which sufficient interest in

the subject was shown by the owners and herdsmen. The Hotis method was relied upon for the diagnosis of the presence of streptococci in the infected animals which were not obviously affected with mastitis. These clinically normal animals plus the cows suffering from acute mastitis, those secreting milk containing flocculent precipitate and those having recent histories of mastitis attacks were considered as the infected group.

Except for a few variations the recommended procedure for conducting the Hotis test was followed, namely: Mix 0.5 cc. of a 0.5 per cent aqueous solution of bromcresol purple with 9.5 cc. of milk and incubate at 37 C. Normal milk which was previously determined to be negative to the test was first added to abnormal and dry cow samples in order to circumvent the difficulties encountered when checking these. Readings were made twice, at approximately 15 hours and again at 24 hours. The reactions considered as positive were similar to those described by Murphy and consisted of either yellow colonies or a thick, yellow deposit in the tubes.

The herd-management practices for control of the disease consisted of grouping the healthy animals together, milking them first with clean equipment and taking other reasonable precautions to prevent the organisms from being carried from infected to healthy udders. The producing ability of an infected cow was the factor that determined whether or not she remained in the herd and the culling of considerable numbers of animals in a herd for the sole purpose of eliminating all those infected with mastitis organisms was not resorted to as a rule. However, there was a tendency in a few herds to cull such animals sooner than would have probably been the case had they not been so affected.

The control measures were satisfactorily carried out by the attendants of 13 of the herds. Two herds were maintained practically free of mastitis as shown by the absence of reactors in the Hotis test and clinical cases. The average percentage of obvious cases was reduced in 10 of the 13 herds from 34 to 4, while the percentage of infection dropped from 48 to 21 for the period of observation, which averaged 20 months. In the one remaining herd of this group of 13, the control efforts were unsuccessful, probably due to the inability of the methods used to detect the source of the infection.

The herd attendants of four other herds made only slight intermittent efforts to carry out control instructions, with the result that the number of cases was practically the same after being under observation over a period of 18 months. The average figures were 22 per cent and 38 per cent for obvious cases and infected animals, respectively, at the time of the first examination, and 14 per cent and 44 per cent for the last check.

No attempt was made by the herd attendants to control the disease in two other herds. The conditions in these two herds when first examined were comparable with those existing in most of the herds included in this study. In both herds the numbers of obvious cases and infected animals increased greatly during the seven-month period of observation. The obvious cases increased from 11 per cent to 51 per cent and the infected animals from 41 per cent to 71 per cent.

Feeding as a Contributory Factor to the Development of Chronic Mastitis

EARL N. MOORE, D.V.M.,
A. H. VAN LANDINGHAM, Ph.D.,
C. E. WEAKLEY, JR., M.S., and
H. O. HENDERSON, Ph.D.

It is thought that the method of feeding and the quality of the ration may be contributory factors to the development of mastitis.

To study the effect of heavy corn feeding as a predisposing factor, a concentrate ration composed of corn and corn-gluten feed supplemented with bone meal and salt was fed to 14 experimental cows. A control group of 12 cows were fed the regular herd ration.

Another group of 16 first-calf Holstein

heifers were used to study the method of feeding the concentrate ration as a possible contributory factor to the development of mastitis. Eight heifers were placed on a limited amount of the grain ration, which was practically the same as that fed to the production herd. They were fed not less than 8 lb. nor more than 10 lb. per day. The controls were fed at the rate of 1 lb. of grain to each 3.5 lb. of milk. These heifers were placed in a separate barn away from other cows.

The total digestible nutrients and digestible crude protein in the grain rations were approximately the same for all cows in both of the above experiments. Alfalfa hay and corn silage with pasture in season constituted the roughage.

A simplified ration was fed to ten Holstein heifers during one lactation, and many have completed two lactations. In all instances the control and experimental cows were managed the same.

To detect the presence of mastitis the following tests were conducted at intervals of two weeks: (1) physical examination, (2) strip cup, (3) brom-thymol blue, (4) chlorine (colorimetric), (5) Hotis test, (6) leucocyte count, (7) microscopic examination and (8) blood-agar plates. Once each month the milk was collected for making chlorine (titration), lactose and pH determinations.

The detection of mastitis by blood-agar plates and the chemical tests as described below showed excellent agreement. The detection of changes in the chlorine (titration) and lactose of milk due to or associated with mastitis based upon quarter differences practically eliminates difficulty due to changes in the chemical composition of milk from time to time as well as changes associated with age and advanced stages of lactation. For a significant difference between normal and affected quarters there must be a difference of at least 0.02 per cent chlorine and 0.36 per cent lactose.

An analysis of the results failed to show any appreciable difference in the incidence or severity of mastitis between the control and experimental groups. Mastitis was prevalent in all groups except those fed the simplified ration. However, cows on the simplified ration were observed only during their first lactation, and the level of production was comparatively low.

Studies on the Etiology and Pathology of Calf Pneumonia

W. T. S. THORP, D.V.M., M.S.,
J. F. SHIGLEY, D.V.M., and
M. A. FARRELL, Ph.D.

Certain histopathologic changes in cases of calf pneumonia appear consistently. These are, briefly, subacute or chronic bronchiolitis, followed by acute pneumonia beginning in the anterior lobes of the lungs and progressing posteriorly, eventually involving all of the anterior lobes and a variable portion of the diaphragmatic lobes. With the histopathology of calf pneumonia in mind, a more careful study of the bacterial flora of the pulmonary tissue was undertaken. From 28 cases of pneumonia which came to autopsy, 20 were examined bacteriologically, with certain organisms appearing consistently. This was especially noticeable in the cultures obtained from the acute areas of inflammation. Morphologic, biochemic and serologic comparisons were made between these isolations and known cultures of the genera Hemophilus and Pasteurella.

The morphology and growth requirements of the isolated organisms resemble the influenza group, whereas other characteristics suggest a relationship to the Pasteurella group of organisms. The pathogenicity of the organisms isolated was determined for rabbits, guinea pigs and mice. Attempts to reproduce the pneumonia in calves were fairly successful. A pleomorphic, influenza-like organism isolated from 20 cases of calf pneumonia is considered a likely causative agent. Further studies were made on the tissues, with special attention being given to the bronchial tubes. A comparative study was made between the cases of pneumonia produced and those occurring spontaneously.

Bovine Sterility from a Practitioner's Viewpoint

JAMES C. CAREY, D.V.M.

When a large number of cows in a herd fail to conceive, the bull may be at fault. Collect a sample of semen either by using an artificial vagina or by removing a small quantity mixed with mucus from the vagina directly following service. The motility and morphology of the spermatozoa are the factors that determine fertility.

Correct diagnosis of the pathologic condition in a non-breeding cow is essential. A cow should be examined about one week after estrum. A rectal examination should be made of the cervix, uterus, ovaries and the fallopian tubes. A glass speculum with a flashlight is used to examine the vagina and os cervici.

Cystic ovaries are treated by rupturing the cysts at weekly intervals and hypodermic injections of anterior pituitary extract.

Failure of estrum may be caused by retained corpus luteum, which should be ruptured and expressed. If no corpus luteum is present and the ovaries seem small and firm, massage of the ovaries is beneficial. Anterior pituitary extract may be tried.

Ascorbic acid is of value in treating cows with normal reproductive organs that have regular estrual periods but do not conceive when bred. Ascorbic acid also is of value in the treatment of cows that when bred, skip two or three heat periods, then come in heat again.

Apparently normal but sterile heifers are successfully treated with absorbent papers impregnated with acriflavin, methylene blue and zinc sulfate placed in the vagina.

Metritis yields to treatment when there are no adhesions between the uterus and other organs, when the uterine wall is not too much thickened and when salpingitis is not present. The treatment consists of rupture of the corpus luteum, uterine drainage and irrigation and the introduction of methylene blue in glycerin into the uterus.

Cervicitis is treated by the use of pure Lugol's solution applied with a swab.

Sterility Due to Ovarian Dysfunction

FRANK E. WALSH, D.V.M.

The author discusses the relationship of the practicing veterinarian to successful herd management. His premises are:

1) Bovine sterility due to disturbances of the various factors other than infection is of primary importance from an economic viewpoint. The greater the frequency of occurrence, the greater the economic loss.

2) There are a large number of factors interfering with reproduction that are not readily understood, thereby making scientific treatment and control difficult.

3) Temporary or permanent sterility is caused most frequently by pathologic changes in the various segments of the reproductive tract due to specific or nonspecific infections.

4) Endocrinology affords a basis for explaining both normal function and dysfunction of the reproductive tract.

Keratitis in Cattle

VILO T. ROSE, D.V.M.

In dairy herds the average loss in milk production due to keratitis runs as high as 32 per cent. In beef production the loss in weight and stunting of growth is severe.

From my observations not all keratitis is infectious. There is an allergic type, as well as types resulting from A avitaminosis and injuries.

The transmission of true keratitis from an infected eye to a clear eye has been demonstrated by the use of sterile swabs.

The symptoms and lesions of true keratitis and the allergic type are similar; however, these can be differentiated easily from cases resulting from nutritional deficiency.

From field experiments we have found the incubation period of infectious keratitis to be three days to three weeks, although the mode of transmission is unknown.

The injection of 3,662 cattle with kera-

titis bacterin over a period of four years showed that early injections tend to prevent the infection.

Physiologic and Metabolic Aspects of Acetonemia in Cattle

M. H. ROEPKE, Ph.D.

The early investigations in the field of carbohydrate and fat metabolism led to the view that ketone bodies produced under conditions of low carbohydrate utilization were toxic, incomplete-oxidation residues of fat metabolism. This gave rise to such sayings as "Fats burn only in the fires of carbohydrates and when the latter are deficient the body 'smokes' with unburnt fats, *i.e.*, ketones." In the light of more recent studies of fat metabolism, such a view is no longer tenable.

Under conditions of insufficient carbohydrates as a source of energy, the animal body may derive 60 to 80 per cent of its energy by the oxidation of ketone bodies. Evidence also has been obtained to the effect that the rate of utilization of ketone bodies as a source of energy is independent of the amount of carbohydrates being oxidized. It would seem more nearly correct to view the production of ketone bodies by the liver as one of the normal reserve mechanisms for supplying the body with energy when carbohydrates do not adequately fulfill the energy requirements. The blood-ketone concentration may be considered as a rough index of the amount of fat being utilized by the body.

Although the fundamental cause for the development of severe ketosis in cattle is not known, the immediate cause seems to be a carbohydrate deficiency. The severity of the clinical symptoms, particularly the nervous reactions, seems to parallel more closely the degree of hypoglycemia rather than the degree of ketonemia. This may be explained by the fact that cells use only carbohydrates as a source of energy and nerve cells are easily affected by low blood-sugar levels.

Some Vitamin Deficiencies of Cattle

C. C. HASTINGS, D.V.M.

Speaking from the standpoint of a practitioner the writer states that in his experience the larger animals suffer far more from insufficient intake of vitamins than is generally recognized.

The night blindness progressing to day blindness, common in lot-fed cattle and often diagnosed as keratitis, is frequently a vitamin A deficiency.

Symptoms of naturally occurring vitamin A deficiency are usually different from those described in veterinary literature. They are diarrhea, excessive salivation and discharge from the nostrils and eyes, dribbling of urine and going off feed. Lameness and edematous swelling of the back and legs below the knees are often observed first. The swellings may reach enormous proportions and extend all over the body, particularly in the scapular region. A moderate vitamin A deficiency does not materially interfere with the rate of gain.

Yellow corn does not contain sufficient provitamin A to sustain rapidly gaining cattle.

This trouble has become more prevalent during the past few years on account of the practice of storing corn and, to a lesser extent, of storing hay. Yellow corn and alfalfa hay lose about 60 per cent of their carotene content during the first seven months of storage, hence the common occurrence of vitamin A deficiency in cattle on full feed in a dry lot.

The consumer demand for beef with white fat has led feeders to literally starve animals with respect to carotene. Low intake of vitamin A in breeding herds often simulates Bang's disease.

Calves born in the late fall and early spring always suffer from lack of vitamin D unless some special provision is made to supply it. Arched back, enlargement of ends of long bones, stiffness and calcium tetany are the symptoms usually observed.

Retained Placenta

M. G. FINCHER, D.V.M., M.S.

The retention of the fetal membranes and their placental attachments is a symptom of various diseases. Acute or chronic metritis and placentitis are usually present. Physiologically the expulsion of the membranes should be completed not later than six hours following parturition in the cow, and in less than one third of that time in the mare. Failure to complete this part of the birth process within these limits leads to a diagnosis of retained placenta.

The etiology is not clearly understood. *Brucella abortus* frequently causes retained placenta in cattle. In the ambulatory clinic of the New York State Veterinary College during the past year about one third of the 200 cases treated were associated with Bang's disease. This represents the incidence due to Bang's disease in this area during the last 21 years. It is well known that when negative herds suddenly become positive and an abortion storm follows, an enzoötic of retained placentas may accompany the abortions.

The control and prevention in cattle is based on breeding only Bang's disease-free cattle. It is highly important also that they should have sound genital organs. In addition, breeding stock should be selected from highly fertile strains. Families with a tendency to sterility, twin pregnancies and retained fetal membranes should be rejected as foundation stock. A rest period of 80 to 100 days after calving before a cow is rebred may prevent this and many other genital disorders. A longer rest period should be given if the parturition was not normal. Endocrine products have been assumed to have some value if used promptly after calving. Estrogens and pituitrin have been tried.

In the mare the same rules apply, but the vulvar suturing to prevent wind sucking, as suggested by Caslick, Jennings and others, is an important step in a program of prevention.

Treatment should assist the cow in the expulsion of the fetal membranes and placenta as promptly as possible without undue irritation. We seldom attempt removal earlier than three days after parturition or abortion.

One important rule in the treatment of retained placenta in the cow is to select a method that will not cause more absorption of toxins than it prevents. In our clinic it has been shown that the so-called dry treatment, or very little treatment, is better than the douching methods used a few years ago.

A variety of powders or oily agents may prevent infection if placed in the uterochorionic space, and the placenta left to fall away. A second examination is desirable a few days or weeks later.

Chemotherapy and intravenous dextrose have proved of value in preventing death from septic metritis in serious cases. The use of stimulants and feeding milk to the cow through a stomach tube are also of value to support cows that are suffering from severe septicemia.

Cesarean Section in the Bovine Species

E. R. FRANK, D.V.M., M.S.

The operation to remove the intrauterine young is one of the oldest surgical procedures, and it is probably one of the most useful, as there are frequent indications for a cesarean section. It is indicated when the veterinarian can not satisfactorily remove the fetus by forced extraction or by embryotomy. For us it has also proved to be the best method to use when the fetus is emphysematous. We believe a cesarean section is indicated when the fetus is alive and can not be removed except by embryotomy.

The technic in bovine animals varies with different operators. The usual method is to make a vertical incision in the flank through the skin, muscles and peritoneum, but we prefer to make the incision on the right side of the median line and halfway between it and the subcutaneous abdominal vein. In this area the incision is made through the skin, aponeurosis of the

oblique abdominal muscles and peritoneum. The end of the pregnant horn is readily brought to the outside through this opening. Gotze recommends making the incision approximately 3 in. lateral to and parallel with the left subcutaneous abdominal vein.

In the bovine species the operation may be performed under the influence of a local anesthetic, which may be injected into the tissue along the proposed line of incision. It may be injected into the epidural space, or paravertebral lumbar anesthesia may be used.

Immediately after the operation the patient should receive dextrose intravenously. If there is any infection in the uterus, liquid bipp should be used. When the uterine muscles are atonic, the proper drugs should be used to stimulate involution.

Sporadic Bovine Encephalomyelitis: Filtration of the Causal Agent

T. W. STEARNS, Ph.D., and
S. H. McNUTT, D.V.M.

Sporadic bovine encephalomyelitis was first reported in Iowa in 1940. It has since been recognized in Minnesota and in Texas. In the past the disease has been observed only in cattle under 3 years of age. Recently it was seen in a herd of 28 animals where all ages were affected. Another new feature was observed in this herd. Seven of the nine affected animals did not develop encephalomyelitis. The infection was confined to the feet and legs with considerable pain and swelling of these parts. The other two animals, both of which died, developed encephalomyelitis.

Efforts to identify the causal agent have met with failure except in filtration trials. Twenty-six carefully controlled filtrations have now been completed. Berkefeld N filters were employed in a majority of cases; Berkefeld V filters were used in the remainder. The causal agent was found to be present in one half of the filtrates. Positive results were obtained as often with the N filter as with the V. Assays before filtration and after filtration show that over 99 per cent of the causal agent is lost during filtration. Changes in pH, in surface tension and in viscosity of the suspending fluids have not made the infectious agent more readily filtrable.

It is concluded that the causal agent is filtrable by the methods employed. Since examinations for bacteria, rickettsiae and pleuropneumonia-like organisms have been totally negative, the above finding probably means that the disease is caused by a virus.

Internal Worm Parasites of Cattle in Northern Indiana

C. HARVEY SMITH, M.D.C.

This paper stresses the importance and increasing prevalence of certain worm parasites in cattle, as shown by personal observations made in a rural practice.

In northern Indiana worm parasites occur in both dairy and beef cattle. Among the more common parasites of the region, identified by G. Dikmans of the U. S. Bureau of Animal Industry, are *Strongylus ostertagi, Oesophagostomum radiatum,* Trichuris sp. and *Setaria labiato-papillosa.*

These parasites occur in young cattle after they have run on permanent pastures. Mature cattle are, however, not immune. Losses from ill health and death occur among them.

Clinical symptoms usually appear in the late summer and fall in the form of general unthriftiness, loss in flesh and blanched mucous membranes, and often diarrhea. Diarrhea, which is particularly common in animals harboring *S. ostertagi,* may be fatal in one to three weeks if profuse.

A positive diagnosis can be made only by microscopic examination of the feces after having excluded such affections as tuberculosis, Johne's disease, coccidiosis, acetonemia and foreign bodies.

In regard to treatment, anthelmintics are but an adjunct. The more significant factors are proper nutrition, sanitation and

management. It is essential that infected herds receive a ration complete in every respect. Roughage should be fed in racks and the concentrate in troughs elevated above the floor. In addition to these measures, such anthelmintics as nicotine sulfate, copper sulfate, kamala, tetrachlorethylene and phenothiazine are useful.

Vitamin A Deficiencies in Ruminants

HUBERT SCHMIDT, B.S., D.V.M.

This paper deals with the conditions produced by vitamin A deficiency in cattle, sheep and goats. Vitamin A or its precursor, carotene, is widely distributed in plants and in fish oils. Plants constitute a rich, natural source of carotene. It is present in practically all green plants, but the amount varies considerably with different plants. When the plant becomes dry, either when cut for feed or when it dries naturally on the stem, destruction of the carotene takes place.

Part of the carotene consumed by the animal is stored in the body, mainly in the liver. The amount of daily storage is limited even under an abundant food supply of carotene. The total storage in the liver, therefore, depends both upon the age of the animal and the abundance of carotene in the food supply. If the daily need of the animal for carotene or vitamin A is not covered by the intake, the animal draws upon its body store. When an inadequate intake continues long enough, the store will become exhausted and it is then that the animal shows the picture of a vitamin A deficiency.

In this condition night blindness is first shown. Some weeks after night blindness develops, other symptoms make their appearance, such as inflammation of the eyes, manifested by lacrimation and turbidity of the cornea which may progress to ulceration. There is a nasal discharge and great sensitiveness to heat, so that during hot weather the animal pants with open mouth, with profuse salivation. Often the animal has seizures of convulsions which last a minute or less. The skin becomes dry and harsh and the animal hidebound. Swellings frequently develop. These usually begin at the feet and extend upward, often reaching the heavily muscled part and in front may involve the shoulders and even the neck. When such an advanced stage is reached the animal will show loss of appetite and flesh and, unless carotene or vitamin A is supplied, will succumb. Urinary calculi are frequently found.

Pregnant animals may abort, or if the young is born alive it is usually weak and lives only a short time. If it survives for several days, it usually develops severe scours before death. In some instances a piece of skin bearing hair will be found on the cornea, or other malformations may be present.

The Stability of Reduced Virulence Exhibited by Brucella Abortus Strain 19

C. K. MINGLE, D.V.M., M.Sc.,
C. A. MANTHEI, D.V.M., and
A. M. JASMIN, B.S., D.V.M.

Further studies on the nature and significance of the reduced virulence exhibited by *Brucella abortus* strain 19 have emphasized the inherent stability of this culture.

In view of the fact that certain characteristics of this strain may have resulted from the modifying influence of bacterial dissociation, accepted methods of reversing the usual S (smooth) to R (rough) pattern have been employed with no appreciable effect on virulence. These findings are in accord with dissociative processes in general, reversions in the form of R to S being extremely difficult to bring about and usually limited in the extent to which they may be forced. This is significant in view of the ease with which the S to R shift may be induced and lends support to the view that the natural tendency may be in this direction rather than toward the more virulent S form.

As the most generally accepted method

of increasing the pathogenicity of avirulent or weakly virulent cultures is by passage through normal susceptible animals, the effect of such procedures on strain 19 was studied.

Repeated animal-passage experiments in which susceptible male guinea pigs were serially exposed by various procedures consistently resulted in the recovery of cultures indistinguishable from the original type.

Extending these investigations still further in susceptible pregnant heifers, it was possible by mass exposure, administered intravenously, to induce active abortions with strain 19. Brucella cultures recovered from aborted fetuses were in turn employed as serial exposure for a total of seven animals. Critical comparison of consecutive recoveries as well as a final comprehensive evaluation revealed no detectable changes in virulence, colonial morphology, antigenic or biochemic activity.

The stability of character associated with *Br. abortus* strain 19 has remained constant under the conditions of experimental procedure followed.

Acetonemia and Albuminuria in Dairy Cows

JOHN N. CAMPBELL, V.S., B.V.Sc.

Typical cases of acetonemia exhibit numerous symptoms the most constant of which are probably constipation and reduced milk flow. This condition is often diagnosed as impaction of the rumen. Frequently there is protracted convalescence.

With the Ross test the presence of ketone bodies in the urine can be detected, but such a test can aid only in diagnosis. Treatment is not always satisfactory; at present a dextrose solution is used.

Albuminuria is another condition that appears in high-producing cows. It, also, is frequently diagnosed as impaction of the rumen. Symptoms are not constant.

Albumen is present in the urine. This makes replacement necessary in the diet.

The Relation of Leucemia and Bovine Lymphocytoma

W. W. THOMPSON, D.V.M., and
LEE M. RODERICK, D.V.M., M.S., Ph.D.

Observations indicate that probably the most common neoplastic process of animals and especially of cattle involves the blood and blood-forming organs. Lymphocytoma, which involves primarily an enormous hyperplasia of the lymphoid tissue, is encountered in by far the greater proportion of cases. Such gross and microscopic pathologic changes of the lymphoid tissues in which all of the normal architecture is thoroughly masked are usually associated with massive infiltrative invasions of various organs by the lymphoid cells. The wall of the abomasum, the heart, liver and kidney are common sites for such predilection. While the spleen in lymphocytoma usually shows little enlargement, it may be enormously enlarged in myelocytoma. Myelocytomatosis seems to be of relatively rare occurrence in mammals as revealed by gross pathologic lesions and verified on microscopic examination.

This neoplastic involvement of the lymphatic tissues is further associated in many cases with a leucemia. Udall suggests that leucemia of cattle is a rare condition. Studies at Kansas State College, however, have shown that a leucemia of immature lymphocytes is of common occurrence. One reason for the failure to observe this condition more frequently is that rarely do we have the opportunity for detailed study of these cases over a period of time. They are seen on the killing floor, at autopsy, or on an occasional call, and such observations are too casual. The experience at this laboratory, however, has shown that a total white cell count and a differential leucocyte count in cases of obscure bovine ailments will usually aid in diagnosing this condition.

Some Nutritional Deficiencies in Dairy Cattle

C. F. HUFFMAN, B.S., M.S., Ph.D.

There are many dietary factors which may be lacking in the ration of dairy cattle. This paper, however, is limited to the deficiency associated with insufficient vitamins and minerals. Fortunately, under normal conditions most of the members of the B complex as well as vitamin K are synthesized by the rumen flora. It has been demonstrated experimentally that cattle require vitamins A, D and the grass-juice factor in their rations. Under ordinary conditions cattle get sufficient carotene (provitamin A) from the roughage part of the ration for maintenance, normal growth and reproduction.

There is a possibility, however, that cattle in drouth areas that are fed roughage low in carotene, or cattle in areas where cereal straw is used as the principal roughage during the winter months, may develop the symptoms of vitamin A deficiency. A deficiency of this vitamin may be diagnosed by the presence of papillary edema or by the presence of night blindness. Cows fed rations lacking in vitamin A give birth to calves which are weak and blind.

Calves require vitamin D for the prevention of rickets. This type of rickets is not usually encountered under farm conditions due to the ultraviolet radiation in summer and the use of sun-cured hay in winter. Each pound of sun-cured alfalfa has about the same amount of vitamin D as one teaspoonful of U. S. P. cod liver oil. There is a possibility of rickets developing in calves fed on concentrates alone, or when grass silage is the only roughage.

A deficiency of the grass-juice factor results in milk of lower nutritive value. Vitamin E either is not required by cattle or the common feeds used supply ample quantities.

Although ascorbic acid is synthesized by the bovine species in quantities sufficient to meet its needs under ordinary conditions, occasionally a deficiency occurs which results in reproductive failure in both the cow and the bull. The feeding of ascorbic acid to cattle is ineffective since it is destroyed in the rumen. Recent experiments at Michigan State College indicate that it is possible to feed a compound which stimulates the secretion of ascorbic acid.

Phosphorus is the mineral most likely to be deficient in the ration of cattle. A lack of phosphorus may produce rickets in calves and anorexia in mature cattle. The marked decline in appetite in phosphorus deficiency results in a drop in milk production and a decline in body weight. Depraved appetite is not observed in severe phosphorus deficiency in mature cows, which makes this disease difficult to diagnose except by the very low inorganic phosphorus of the blood plasma (about 1 mg. per cent). In marginal phosphorus deficiency, depraved appetite is manifested. Phosphorus deficiency is more likely to occur when legumes furnish the principal source of protein, since most protein concentrates are good sources of phosphorus. Special odorless steamed bone meal is usually the best source of phosphorus.

Calcium deficiency is not likely to occur in cattle fed plenty of roughage, since roughages, especially the legumes, are usually good sources of this element. Calcium may be needed when the roughage is largely straw or when non-legume roughages are fed in limited amounts. The calcium-phosphorus ratio is usually not an important consideration in the nutrition of dairy cattle.

When foods and water are low in iodine, goiter occurs in newborn calves which can be prevented by feeding iodine as iodized salt. There is no evidence that an iodine supplement is advantageous under other conditions.

Nutritional anemia has been observed among cattle in certain widely scattered areas throughout the world. This condition has been called "bush sickness," "skinnies," or "Morton Mains ailment" in New Zealand; "daising," "pining," or "vanquish" in Scotland; "lecknucht" in Holland; "Nakuritis" in Kenya Colony, East Africa; "coast disease" in King Island,

Tasmania; "salt sick" in Florida; "neck ail" in Massachusetts; and "Grand Traverse" or "coast disease" in Michigan. "Neck ail" in Massachusetts was attributed to an iron deficiency, but anemia in other regions appears to be due to a deficiency of cobalt, and in a few instances to copper.

A lack of cobalt results in clinical symptoms identical with those of phosphorus deficiency. Investigations of Killham, Baltzer, Duncan and Huffman indicate that Grand Traverse or lake shore disease in Michigan is due to cobalt deficiency associated with a subnormal amount of this element in the home-grown feeds. The feeding of cobalt either as the sulfate or chloride to affected animals resulted in a spectacular return of appetite and a progressive improvement in condition and milk production. Calves as well as cows were affected.

The magnesium requirement of cattle is so low that there is little likelihood of a magnesium deficiency occurring under farm conditions. The disturbed magnesium metabolism occurring in grass tetany and milk fever can not be explained as yet on the basis of nutrition. The possibility of a dietary factor regulating magnesium metabolism has been suggested.

The Relationship Between the Blood and Whey Titers and the Occurrence of Brucella Abortus in the Udder

H. J. METZGER, D.V.M., and
FREIDA R. STOKES, M.S.

A study was made in a commercial dairy which was blood tested either monthly or semimonthly with the immediate removal of the reactors. During a period of 18 months the whey titer was determined at intervals from 509 different cows. All samples were first tested with a plate antigen in a 1:6.25 dilution. Any sample showing a trace of a reaction was then tested with a tube antigen in a series of dilutions starting at 1:12.5. As many as possible of the quarters showing a whey titer were cultured by guinea pig inoculation. Milk also was cultured from cows with a blood titer, but without a whey titer.

Brucella abortus agglutinins were not found in milk from 369 cows which had shown no blood titer since admission to the herd, from 26 cows which reacted, and from 81 animals which showed only a suspicious blood titer. A whey titer was found in the milk from 28 cows which reacted and from five animals which developed only a suspicious blood titer.

Thirty inoculations of milk from 14 of the cows, which exhibited a blood titer of varying degrees but no whey titer at any time during the work, were all negative. Milk was cultured by guinea pig inoculation from 24 of the 33 animals which showed both blood and whey agglutinins. Negative results were obtained from 11 of these animals. In seven of these 11 cows, a series of negative whey titers was followed by the sudden appearance of a titer of almost equal intensity in three or four quarters which usually appeared almost simultaneously with a marked increase in the concentration of blood agglutinins. This finding seems to indicate that a condition may arise which makes possible the passage of blood agglutinins into a noninfected udder. On the other hand, the continued presence of varying concentrations of agglutinins in the milk from one or two quarters was found to be strongly indicative of *Br. abortus* infection in those quarters.

Br. abortus was not isolated from the udder of any cow which had not shown both a blood and a whey titer. It was, however, found impossible to establish any correlation between the concentration of blood and whey agglutinins and the presence of *Br. abortus* in the milk. Positive cultures were obtained from the udders of 15 different animals. Blood titers at the time of isolation varied from negative at 1:25 to complete at 1:200 or better. Fourteen individual quarters yielding *Br. abortus* showed whey titers, at the time of isolation, varying from negative at 1:12.5 to complete at 1:100.

Some Observations on the Pathology of Pneumonia of the Food-Producing Animals

ROBERT F. LANGHAM, A.B., M.S., FRANK THORP, JR., D.V.M., M.S., Ph.D., and RONALD T. INGLE, B.V.Sc., V.S., M.S.

During the years 1938 and 1939, 31 cases of pneumonia of cattle, sheep and swine were studied with reference to bacteriology and pathology.

The following microörganisms were isolated from the lungs: four bovine cases—beta streptococci, *Staphylococcus aureus, Staph. albus, Escherichia coli* and *E. communior;* nine ovine cases—*Pasteurella ovisepticus,* beta streptococci, spray diplococci, *Staph. aureus, Staph. albus, E. coli* and *Neisseria catarrhalis*-like bacteria; five porcine cases—*P. suilla,* beta streptococci, diphtheroids, *Staph. aureus, Staph. albus, E. coli* and *Salmonella suipestifer.*

The gross pathology was usually confined primarily to the apical and cardiac lobes, but often involved the diaphragmatic and intermediate lobes.

A histopathologic study of the lungs revealed lesions of bronchopneumonia that were either acute or chronic. The bronchopneumonia was patchy throughout the lobules and appeared to have begun as a bronchiolitis.

The bronchioles were more or less filled with an exudate made up primarily of polymorphonuclear leucocytes and a few macrophages. In some cases the epithelium was swollen, while in others desquamation was taking place.

The alveoli surrounding the respiratory bronchioles were usually filled with a similar type of exudate. The alveoli beyond these areas contained, as a rule, relatively more macrophages than polymorphonuclear leucocytes. Some also contained fibrin and serous exudate. The walls of the alveoli were thickened by congestion, edema and exudative cells. Atelectasis was almost invariably present to some extent. Hemorrhage and emphysema were observed in some instances.

In the sections from sheep and swine lungs, necrosis and areas of potential suppuration were sometimes present. The pneumonic lungs of sheep frequently showed a marked hyperplasia of the smooth muscle.

In the subacute cases fibrosis was often observed in the peribronchial areas, adventitia, walls of the alveoli, septa and pleura. Some of these cases also showed peribronchial and perivascular infiltrations with lymphocytes and macrophages.

In the acute cases the septa often showed cellular exudate, distention of the lymphatics, fibrin and serous exudate.

If a pleuritis was present, cellular exudate, fibrin, serous exudate and congestion were observed.

The blood vessels showed numerous inflammatory changes, such as endarteritis, arteritis, periarteritis, phlebitis and periphlebitis and occasionally some degenerative changes.

Reindeer in Arctic Countries, Together with Observations on the Fertility of the Plains Buffalo and Deer

SEYMOUR HADWEN, D.V.S.

Wild animals possess uniformity of size and conformation with respect to age and sex, in contrast with some of our breeds of cattle, the individual members of which are rarely alike, though they may have a fairly uniform coloration. Probably the greatest differences are found in stabled animals, due to the artificial change of time in which they have their young.

With animals such as reindeer, climate rules the period when the fawns are born; consequently all the events in their lives go with clockwork regularity. Their migration follows the vegetation. Reindeer fit in perfectly with their surroundings and have no competitors. Therefore, we should expect them to be free from most diseases, and they are. Tuberculosis and abortion do not trouble them. This furnishes an

opportunity of tracing what the normal birth rate should be.

In a well-managed herd on good range, a herd doubles in three years. Only one fawn is born and the sexes are 50-50. In two of our reindeer herds, the birth rate has risen year by year. The average weight of the animals has increased and for the past four years early fertility in yearling reindeer has been noticed. (The average age at which does have their first calf is 2 years.) This early reproduction has caused the birth-rate figures to rise. One can not view this increased fertility in a manner other than with satisfaction, and it has evidently been brought about through favorable environment.

If a female fawn has grown larger than the average, if her horns are large in proportion and she is peeling the velvet off them, she is likely to mate the same season.

The Army Remount and Breeding Plan

WM. E. JENNINGS, D.V.M.

The remount service of the United States Army was authorized by Congress in June 1920 for the promotion of the Army horse-breeding plan. The entire United States is divided into seven remount areas with a headquarters in each area. In addition there are three remount depots—located at Fort Reno, Okla.; Fort Robinson, Neb.; and Front Royal, Va. The methods of handling and processing newly purchased horses and mules for the Army and stallions to be used for breeding are discussed in detail in this paper. The remount service maintains in the stud about 700 stallions.

Through the efforts of Colonel R. A. Kelser, Veterinary Corps, there is established at the Front Royal remount depot a well-equipped laboratory for the study of such common equine diseases as influenza, periodic ophthalmia and strangles.

At each depot there is a broodmare band of approximately 55. The records for the past five years on the broodmare band at Front Royal have been carefully examined, grouped and classified, setting forth some of the common problems which confront any veterinarian whose duty it is to advise on horse breeding. The information obtained from these records is also included in this paper. The results of breeding on the ninth day after foaling (breeding in the foal heat) are interesting and instructive. Some of the "danger signals" which foaling mares often show are mentioned. The importance of maintaining stallions in excellent physical condition and good genital health is stressed. In conclusion the author lists some rules to follow to maintain a high standard of breeding efficiency over a period of years.

Embryotomy in the Mare

WALTER R. KRILL, B.Sc., D.V.M.

In dystocias in mares, particularly in the larger draft types, embryotomy is necessary in the majority of cases we encounter. The enormous size of the fetus and mare make it almost impossible to reach and correct the position of the misplaced limb or head, unless one is called in the early stages of parturition before the uterus has emptied itself of the uterine fluids and contracted tightly around the fetus. The cases of dystocia brought to us are all of from 12 hours to as long as three weeks following the onset of labor and, naturally, are the more difficult types.

In performing embryotomy we prefer to keep the animal in a standing position. This allows the operator to work at greater advantage, is less tiresome, the animal is more contented, and it eliminates the abdominal pressure encountered when the animal is lying down.

Epidural anesthesia is the only anesthetic used. Through proper technic in administration the animal can be kept on its feet, with all expulsive efforts under complete control, so that all necessary obstetrical operations can be performed without interference and at a minimum danger to the patient. Proper anesthesia is "half the battle" in most obstetrical operations in mares, and in many instances in our

experience represents the difference between success and failure.

We do not use hooks and sharp cutting instruments. It is discouraging to work for hours performing an embryotomy and effecting a delivery, and then have the animal die as the result of a slip with one of these instruments. Through the use of the fetotome, embryotomy can be performed in far less time and with less effort, and the danger of injury to both the patient and operator is minimized.

In the use of traction, to bring about delivery, it is important to take sufficient time to allow the tissues to dilate, and to keep the fetus and pelvic canal well lubricated. Where proper time is allowed for traction and sufficient lubricants are used, laceration does not occur.

Diseases of the Newborn in the Equine Species

R. A. McINTOSH, M.D.V., B.V.Sc.

The prevalence of diseases affecting the newborn of the equine species constitutes the most formidable and serious obstacle to successful horse-breeding operations. Some of the conditions responsible for the losses experienced are fairly well understood; others are not as clear and, as a result, the mortality remains high.

To facilitate an orderly deliberation of these affections, they are dealt with in the following manner: avitaminoses, congenital infections, foal septicemia, umbilical infection, persistent urachus, and pyemic or septic arthritis. It is logical that the aforementioned conditions should be given collective consideration for some of them have definite relationships and, furthermore, they involve prenatal influences which have their origin during pregnancy.

Mention is made of the part avitaminoses A, B, D and E may play in the occurrence of diseases of the newborn and the significance that some of them may have in the development of congenital infections. The diseases referred to are dealt with individually, and the features pointed out which enable one to recognize them.

Preventive measures are stressed, and since the vitality and disease-resisting powers of the newborn are a reflection of the health and vigor of the pregnant mother, emphasis is placed upon breeding hygiene, the proper care and feeding during pregnancy, and the use of other measures, such as the administration of biological products. Mention is made also of the extension of some of these prophylactic measures to the newborn. The preventive features more or less suffice for all of the diseases mentioned.

Animal Casualties from Chemical Warfare Agents

DON L. MACE, D.V.M.

Chemical agents are effective weapons of warfare because they may remain in areas or travel with the wind and produce casualties until they are dissipated, whereas projectiles must travel a relatively straight course and are effective only while in motion.

Horses and other animals are more resistant to the action of tear gas and irritant arsenical sternutator smokes than man; however, they are on the same plane with respect to susceptibility of lung-irritant and vesicant agents.

Lung-irritant agents are nonpersistent, remaining in the air for about ten minutes after release, and when inhaled in sufficient quantities produce casualties with extensive lung edema. The development of the symptoms may be delayed and avoidance of physical exercise after exposure is an important factor in preventing fatal termination. Treatment consists of an early venesection, which may decrease the severity of the symptoms of lung edema.

Vesicant agents attack the eyes and skin and produce severe tracheolaryngitis when inhaled. Most of these agents are persistent and remain in an area for several days after release. Early removal of these agents from animals contaminated decreases the severity of the injury. Washing injured eyes with bicarbonate of soda solu-

tions followed with applications of bland lubricants is advocated. Lung injuries may be treated symptomatically. Early removal of the agent from contaminated skin by the use of chlorinated preparations, *i.e.*, bleach suspension (5%), decreases the severity of injury.

The application of individual and collective protection for animals, the issuance of proper instructions to attendants in regard to protection of food, forage and water, and the concentration of animals at locations least favorable for gas attacks, are all measures which will greatly lessen the incidence of casualties.

Some Observations Regarding Vitamin Requirements of Thoroughbreds in Training

CASSIUS WAY, B.Agr., A.B., D.V.M.

It is only within recent years that investigators in the field of animal nutrition have revealed the causes and methods of preventing certain diseases due to mineral and vitamin deficiencies. Mineral deficiencies in animals extend not only to the more common mineral elements, such as sodium, potassium, calcium, phosphorus and iron, but also to the so-called trace elements, manganese, copper, iodine, magnesium and zinc, which are considered to be essential for well-balanced and satisfactory nutrition.

Vitamin and mineral metabolism in animals are so closely related that it is often difficult to describe the functions of a vitamin without simultaneously taking into account the related functions of one or more mineral elements. The nutritional interrelationship of vitamin D with calcium and phosphorus is a classic example of this.

While the rôle played by vitamins in the nutrition of the horse has not been as extensively explored as that of other animals or man, it is well known that horses show the same type of symptoms resulting from lack of certain vitamins as do other smaller animals whose nutrition has been studied more thoroughly. With respect to the actual vitamin requirements of the horse, we must rely for the present on the analogy that these requirements are generally similar to those of other animals and, with certain exceptions, not dissimilar to the vitamin requirements of man.

Multiple nutritional deficiencies have been pointed out in man by various writers. The author is convinced that multiple vitamin-mineral deficiencies also occur in Thoroughbreds in training.

During the past five years the writer has made a study of 116 cases of Thoroughbreds, which he records, with reference to the sugar, calcium and phosphorus balance in the blood serum. The findings are at considerable variance with the records of other American authors in that the Thoroughbred in training is apparently quite low in sugar and calcium. Phosphorus being normal, a Ca-P imbalance results. Supplementation of the diet of horses in training with a palatable compound that is heavily fortified with essential vitamins and minerals, when used as the only treatment, has relieved anorexia, multiple peripheral neuritis and nervousness and has improved metabolism in many cases as evidenced by better condition and better coat.

A Practitioner's Experience with Infectious Hemorrhagic Dysentery of Swine

T. L. STEENERSON, D.V.M.

The author outlines the Indiana history of infectious hemorrhagic dysentery of swine and puts the full blame for its dissemination upon community sales barns.

It is pointed out that regulatory officials are doing little to control its spread and that research institutions are not giving it enough attention.

History, symptoms and lesions are discussed in detail. Several specific case reports are given in which results from a wide variety of treatments are shown.

The death rate can be held to a minimum by feeding sick animals on a medicated diet of highly concentrated salines and alkalines. Remarkable results have been obtained in

a large number of cases where the patient, too weak either to eat or drink, has been treated *via* the stomach tube.

Some Swine Problems of the Future

FRANK BREED, D.V.M.

This paper deals with two disturbances in swine; first, an infectious one—swine erysipelas—and, second, a nutritional deficiency which has existed in young growing swine for a number of years, but has only recently been recognized as pig pellagra.

Swine erysipelas is not discussed in detail as it occurs in the acute septicemic form but, rather, from the appearance of the disease in its insidious form. The fact is pointed out that the infection may exist on a premise and in certain individuals of the herd for quite some time before it manifests itself in a recognizable form.

Pig pellagra, a disease which may be confused with infectious enteritis, is discussed and the way to less errors in diagnosis is pointed out, as well as the means of recognizing this nutritional disturbance.

Tests on the in Vitro Neutralization of Hog-Cholera Virus with Hog-Cholera Antiserum

H. C. H. KERNKAMP, D.V.M., M.S., and M. H. ROEPKE, Ph.D.

Virulent hog-cholera blood and hog-cholera antiserum were mixed together in various proportions and incubated at 37.5 C. for different lengths of time. The ratios of antiserum to virus in the various mixtures ranged from 0.66:1 to 30:1. The amount of virus each pig received in the mixture was 2.5 cc. per 50 lb. of body weight. Subsequent to the mixing and incubating, the mixtures were injected into susceptible pigs. One series of the serum-virus mixtures was incubated for one hour and a second series for five hours. The results on the two series are quite different.

The virus in the mixtures incubated for one hour was not neutralized from the standpoint of its infectiveness or its property of producing immunity. The pigs receiving these mixtures either promptly sickened and died from cholera or were made immune, depending on the serum-virus ratio. The higher ratios produced immunity. Where the incubation time was extended to five hours, evidence was obtained indicating a neutralization of the virus as shown by the failure of a number of pigs to develop the disease. These pigs proved to be susceptible when challenged with virulent virus 83 days or more after the serum-virus mixtures were injected. Seven of the 17 pigs in this series injected with the mixtures indicated a failure to neutralize the virus, since they either developed the disease or died of other complications, or became immune.

Studies on Baby-Pig Mortality. II. Further Observations on Acute Hypoglycemia in Newly Born Pigs

JESSE SAMPSON, B.S., D.V.M., Ph.D., H. R. HESTER, D.V.M., M.S., and ROBERT GRAHAM, B.S., D.V.M.

During the past eight years sporadic outbreaks of an unidentified, highly fatal malady of newly born pigs have come to the attention of the Illinois Agricultural Experiment Station. This, or an indistinguishable malady, has been arbitrarily referred to as baby-pig disease. In connection with different outbreaks on widely separated farms, an increasing number of naturally affected pigs have been delivered to the laboratory for examination, while a limited number of affected herds have been inspected to observe methods of managing the pregnant sows.

As far as could be determined, the rations fed the pregnant sows appeared adequate. However, further information regarding the relation of feeding of the pregnant sow to the disease in newly born litters is desirable. In so far as could be determined, sows that farrowed litters

which developed the disease were in good condition and well housed. No clinical evidence was encountered of intercurrent infections among the sows during pregnancy which might have caused illness or death of newly born litters as a sequel. The extent of the loss in different herds has ranged from a single litter to as high as 22 litters, representing approximately 5 to more than 95 per cent of the litters farrowed. Gilt as well as sow litters have suffered. The seasonal incidence of the disease appears to be highest during the late winter and early spring months.

Pigs that suffer from the disease referred to herein present a characteristic syndrome. In typical outbreaks newly born pigs, though apparently normal at birth, suddenly develop symptoms. Pigs that immediately display similar or indistinguishable symptoms at birth are purposely excluded from consideration in this report. In the typical syndrome apparently normal litters at approximately 24 to 48 hours of age show symptoms of shivering, dullness and inappetence. Affected pigs often emit a weak, crying squeal. Coincident with the loss of appetite and weakness, the hair coat becomes rough and the affected animals leave the nest and lapse into coma. Death of several or all pigs in the affected litters often occurs within 24 to 36 hours after the first symptoms are manifested.

At autopsy no gross pathologic lesions have been observed, though evidence of gastrointestinal stasis has been noted frequently. The stomach of some pigs is filled with curdled milk, while in others the absence of milk in the stomach suggests that the animals failed to nurse. These observations raise the question of the subclinical presence of the disease in some pigs at birth as well as the possibility of fetal death from the same cause or causes followed by stillbirth. Following death of the newly born litters, lactation in the sow abruptly subsides with only transitory congestion of the mammary glands.

Supplementing gross autopsy examination of typically affected pigs, repeated efforts have been made to demonstrate in the tissues the presence of pathogenic agents, such as bacteria, filtrable viruses, protozoa and toxins. The results proved negative. Failure to reproduce the disease experimentally or to demonstrate the presence of an infectious agent prompted a chemical examination of the blood. Analyses for calcium, inorganic phosphorus and ketone bodies revealed values within the normal range for these constituents. However, abnormal amounts of blood sugar have been consistently encountered. The sugar level ranged from approximately 3 to 61 mg. per 100 cc. In one series of 20 affected pigs from 7 different litters, an average of 26 mg. of sugar per 100 cc. of blood was found. The blood-sugar level in normal pigs of the same age ranged from 99 to 131 mg. per 100 cc., with an average of 113 mg.

Pigs in the early stage of the disease showed improvement in two or three hours following dextrose therapy, while repeated injections of dextrose together with forced feeding of milk demonstrated that the life of naturally affected pigs could be prolonged, and in some cases the treated pigs recovered. However, dextrose therapy, even if repeated, appeared ineffective in the terminal stages of the disease.

Plastic Surgery

J. C. FLYNN, D.V.S.

Caudectomy, setting, dropping and trimming ears, closing congenital clefts, ectropion and entropion, and correcting strabismus are common practices in the field of plastic surgery. Dropping ears and setting them are discussed in detail.

The technic used by the author for dropping ears is as follows: Anesthetize with barbiturates intravenously, procain or epinephrin locally. Clip the hair and insert a cataract knife (Graefe's, No. 4) flat between the dorsal skin and cartilage at the anterior margin, at the desired breaking point. Force the blade transversely across, slightly toward the base, and sever the cartilage and muscles. Repeat from the posterior margin. Place a round applicator on the ventral surface at the break,

with the points protruding. Wrap tape over the ear and applicator, holding the ear in a folded position. Apply a head cap for 24 hours.

Setting ears is in direct opposition to dropping. Prepare a small area on the dorsal surface at the site of incision. Anesthetize as above. Insert the knife through the skin and pass it full length toward the base of the ear. This puts half of the blade above and half below the break. Sever the cartilage longitudinally. Make two or three more incisions parallel to the first one, as needed to stiffen the ear. This makes a scar (backbone) which helps to keep the ear up. Brace with tape, one strip on top of the other, until the ear is erect. Keep redressing until ear remains erect without tape.

Scar evidence must be avoided.

Significance of Distemper Inclusion Bodies

WALTER WISNICKY, B.S.A., D.V.M., and LOUISE WIPF, B.E., Ph.M., Ph.D.

During recent years a great deal of attention has been given to the inclusion bodies formed in association with distemper. This disease is important in the silver fox, mink and dog, from an economic point of view. It naturally follows that inclusion bodies of distemper are studied more in these animals than in others.

This discussion is confined to distemper inclusion bodies of foxes and minks. These fur bearers are raised domestically in numbers large enough to constitute a recognized industry. The circumstances are such that distemper inclusion bodies are of even greater importance in these animals than in dogs.

Our observations involve 646 fox and mink specimens which were examined for distemper inclusions. Most of the studies were made on bladder and tracheal mucosa, although a portion of this work included the examination of several other tissues. Both sectioning and smear methods were used. Examination by both methods was made on the same specimen whenever necessary.

Two kinds of distemper inclusion-like bodies which apparently did not represent distemper in its clinical form were encountered in several instances in the epithelial tissues, where distemper inclusions are most frequently found. One kind was encountered in sectioned material from foxes on ranches with no clinical evidence of distemper. Cytoplasmic inclusions, although on an average smaller but similar in shape and in staining properties to distemper inclusions, were found in considerable numbers. The other kind was found in bladder and tracheal smears from foxes and minks where distemper in clinical form did not occur. These were frequently dissociated from the cell protoplasm, although they resembled distemper inclusions.

Our studies indicate that distemper inclusion bodies are a valuable aid in the diagnosis of this disease in foxes and minks. In many cases the disease can be identified solely by the inclusion-body picture. Yet, there are a sufficient number of instances where inclusion-like bodies similar to distemper inclusions occur, which makes it necessary to consider fully the history, clinical symptoms, autopsy picture and inclusion-body findings in order to establish a correct diagnosis.

Canine Encephalitis and Post-Encephalitis

C. HERMAN BECKMAN, D.V.M.

Canine encephalitis is a virus disease distinct from distemper and rabies. The symptomatology, course of the disease and actual cases are described and illustrated with colored motion pictures. Cases of encephalitis that appear identical with dumb rabies are depicted, along with cases of true dumb rabies for comparison.

We eat all of the veal and beef we produce and import small quantities of each. Importations were heaviest following the drouth of 1934.

Studies on Production of Specific Antibodies Against the Agent of the Fowl-Leucosis Complex

C. D. LEE, D.V.M., M.S.

One-year-old ducks and turkeys, which are considered nonsusceptible or only slightly susceptible, were immunized by means of 15 intramuscular injections of material from chickens suffering from myeloid or lymphoid forms of fowl leucosis. The injections were made every other day until 15 injections were made. Ten days after the last injection the birds were bled. Antibody concentration was maintained by injections every 14 days.

Twenty cubic centimeters of duck or turkey serum in either pooled or individual samples was mixed with 5 cc. of freshly drawn oxalated blood or centrifuged plasma from a bird suffering with myeloid leucosis, or 20 parts of duck or turkey serum was mixed with 5 cc. of filtrate or tissue extract from cases of the neural type of lymphoid leucosis.

The infective agent and serum mixture was inoculated intracardiacally or intravenously into susceptible chicks when they were 6 to 8 weeks old.

For controls 20 cc. of normal saline solution was mixed with 5 cc. of leucotic material and inoculated intravenously or intracardiacally into susceptible chicks when 6 to 8 weeks old. A second control of now inoculated chicks was used against the inoculated groups.

Normal serum from unimmunized ducks and turkeys was used to determine whether or not an inhibitor to fowl leucosis of chickens might be contained in normal blood of ducks or turkeys. Inoculations were made in the same manner and same proportion as in the other experiments. The results of several experimental inoculations are given, showing that serum from immunized ducks and turkeys neutralized the agent of fowl leucosis in cell-free plasma, fresh whole blood filtrates, and tissue extracts.

Plasma from adult chickens previously used in inoculation experiments which failed to die or were resistant to repeated injections of leucotic material, was mixed with leucotic material in the same proportion as in the case of immune serum from turkeys and ducks. Plasma from these chickens was able to neutralize or inhibit the agent of fowl leucosis.

Inoculation experiments with immune serum produced in ducks and turkeys by injection of myeloid leucosis material proved to inhibit or neutralize lymphoid leucosis material.

The Use of Vinylite Resin Corrosion Preparations in the Study of the Organs of the Domestic Fowl Affected with the Avian Leucosis Complex

G. E. COTTRAL, D.V.M.

The technic for using vinylite resin, to prepare corrosion casts of the vascular systems of organs of the domestic fowl, is described in detail. Two modifications of the technic are given: first, a method for retaining the skeletal parts adjacent to vascular casts and, second, a procedure for retaining the soft tissues surrounding the casts in a transparent form. These procedures were utilized to study the vascular alterations in chicken organs involved with the avian leucosis complex.

Hepatic vein corrosion casts of greatly enlarged livers, from two cases of leucosis and one case of lymphomatosis, were compared with casts from normal livers. A similarity in arrangement of major venous branches was noted; however, the branches were much larger and farther apart in the pathologic cases. In cases showing large focal lesions of lymphomatosis, the casts obtained were erratic, and the veins adjacent to the periphery of the larger lesions were observed to be flattened. The difference in vascularity is pointed out as the primary reason for the color contrast between the normal tissue and the lesions.

The Present Status of Avian Encephalomyelitis

ERWIN JUNGHERR, D.V.M., Ph.D., and EDWIN L. MINARD, Ph.D.

Avian encephalomyelitis (A. E.) was first described by E. E. Jones in Massachusetts (1932) under the name of epidemic tremor. Since then it has been observed with increasing frequency in the Atlantic States, Colorado, Indiana and Tennessee, especially during the winter and spring. Its occurrence has been reported from Australia.

The virus-etiology of the disease as suggested by Jones was confirmed by Van Roekel and Olitzky; the latter established A. E. as an entity and determined the virus size. In general, field virus was of low virulence (titer 10^{-2} to 10^{-5}) with about 50 per cent takes. In 19 transmission trials, three strains subpassaged regularly. Attempts to increase the titer by glycerol, starch, avitaminoses and insulin failed, but rabbit testicular extract increased the number of takes.

Clinical trembling occurs in one half of the cases. The majority show ataxia, and about 10 per cent do not show definite symptoms but show specific histologic changes. Surviving chicks may later show unilateral paresis, clinically indistinguishable from neurolymphomatosis. The microscopic lesions occur in the central nervous system and are characterized by mononuclear infiltration, glia foci, axonal degeneration and loss of Purkinje cells. The visceral organs show hyperblastic lymphoid follicles which *per se* are not diagnostic. Experimental cases fail to show marked visceral lesions.

Epiornithic surveys point to an egg-borne cycle of the disease but, even in known-affected flocks, the occurrence in successive hatches is usually intermittent, with intervals up to two years. Cross-breeding experiments with affected parent birds by Bottorff gave negative results. Van Roekel produced affected chicks by virus inoculation of fresh hatching eggs, while Olitzky failed to find survival of A. E. virus on the chick chorioallantois and questioned an egg-borne cycle.

Elucidation of the behavior of the virus during interepiornithic periods was attempted by serologic tests of adult birds of known-affected flocks and by chick inoculation of their tissues and excreta. Weak neutralizing antibodies were demonstrated in young survivors—similar to Olitzky's findings. Of 10 different tissues from 5 birds, the liver, pancreas and especially gonads of 3 produced typical histologic lesions; similarly filtered feces from 21 of 47 birds, in contrast to 8 of 30 birds from presumably not A. E.-infected flocks, produced lesions. Histologically affected birds failed to show clinical symptoms, which suggests either a weak virus or a nonspecific reaction. Control chicks inoculated with normal tissues did not show such lesions.

The susceptibility of embryonic tissue was studied by inoculation with A. E. virus: Of 337 fresh hatching eggs, 3 produced clinically affected chicks; of 634 intracerebrally inoculated embryos, 238 hatched with 68 clinical and histologic takes; of 161 intravenously inoculated embryos, 76 hatched with 4 takes; of 70 embryos inoculated on the chorioallantois, none showed takes.

The virus was demonstrated in the unabsorbed egg yolk of spontaneously affected chicks in one of two trials.

These results suggest an egg-borne cycle of A. E. infection, the persistence of the virus in visceral, especially gonadal, tissues of certain adult birds, and its elimination by way of the genital and digestive tracts.

A Review of 3,000 Wild Bird Autopsies on Western Lake Areas

E. R. QUORTRUP, D.V.M., and J. E. SHILLINGER, B.S., M.S., D.V.M.

Statements based on recorded figures and findings call for greater elaboration than is possible in a paper of this character. This discussion does, however, serve to illustrate

the many pathologic conditions that take a toll from our valuable wildlife resources. Environment has an important part in the losses encountered in wild birds. While infectious diseases are not ordinarily important sources of loss in wild birds, they are occasionally responsible for deaths. Likewise, parasites may become sufficiently numerous as to produce deaths under conditions of great concentrations. Parasites are not ordinarily the cause of heavy losses. Pollution and unhealthful environment, allowing the development of toxins in the form of food poisoning in stagnant places, cause the greatest losses. Physical injuries and wounds account for many sporadic losses.

It is pointed out that wild species are probably subject to as great variety of disease conditions as are domestic poultry. Likewise, it is noted that the wild groups are less tolerant of auto-pollution and unhealthful environments than farm flocks.

Salmonella Infections of Breeding Turkeys

B. S. POMEROY, D.V.M., and
R. FENSTERMACHER, D.V.M.

Turkeys were obtained from five different breeding flocks. Infection in these flocks was previously determined as a result of bacteriologic examinations of birds that died during the first few weeks of life. The selection of birds was made on the basis of complete or partial test-tube agglutination titers. All birds were trapnested. Poults that died or were destroyed, infertile eggs and embryos that failed to hatch were all examined bacteriologically. The adults were destroyed and subjected to careful bacteriologic examination.

Flock 1 is of particular interest, for 242 poults died during the first month after being hatched. *Salmonella pullorum* or *S. typhi-murium* was not recovered from any of the poults hatched from the first six settings; four other types of Salmonella were isolated. Multiple types were recovered from several individuals. On the other hand, poults hatched from later settings yielded only pullorum or typhi-murium organisms. The Salmonella types found in the early hatched poults were not recovered from the adults.

Poults from flocks 2, 3 and 4 were similarly infected. Eighty poults were hatched from flock 5 and 73 of these died early in life. *S. pullorum* and *S. typhi-murium* were isolated from 10 per cent of the poults.

Experimentally infected adult turkeys develop maximum agglutination titers within a period of two weeks and at the end of two months may become negative unless the infection becomes established in the visceral organs.

There were 30 breeding turkeys in flock 1. Flocks 2, 3 and 4 were maintained as one unit and contained ten birds. Flock 5 contained 14 birds. *S. typhi-murium* was recovered from the internal organs of two birds from each of flocks 1 and 5. *S. pullorum* was recovered from the organs of one bird from each of flocks 2 and 3 and from two birds from each of flocks 4 and 5.

It was concluded:

1) It is highly improbable that a single agglutination test will remove all infected turkeys from a breeding flock.

2) Repeated tests of infected flocks will usually reveal additional infected birds.

3) No explanation is offered with reference to multiple-type Salmonella found in young poults in view of the fact that none of the adults were found similarly affected.

4) *S. typhi-murium* is capable of localizing within the intestinal tract. It may be transient in some birds and permanent in others.

5) The serum agglutination titer of birds infected with *S. typhi-murium* may vary decidedly over a period of several months.

6) The rapid whole blood stained antigens used were not found reliable diagnostic agents for the detection of turkeys affected with paratyphoid infection.

7) The heaviest mortality occurred during the first month of the poult's life. Approximately 10 per cent of the survivors showed evidence of infection as determined by the agglutination test.

8) The limited amount of data obtained

disclosed, as was to be expected, that cross agglutination with other Salmonellae did occur.

9) Three additional Salmonella types were isolated from poults: *S. new brunswick*, *S. illinois* and *S. panama*.

Paratyphoid Infection in Quail

CHARLES H. CUNNINGHAM, B.S., M.S., D.V.M.

An acute paratyphoid infection of quail chicks in which the highest mortality occurred in chicks from 3 to 9 days old was investigated and *Salmonella bredeney* was isolated as the etiologic agent. *Escherichia communis* and *E. communior* were isolated from several chicks. As far as known, at the time of isolation, *S. bredeney* has never been reported in an infection of quail.

From the 18,580 eggs set in the 19 different hatches of the season, 11,618 quail chicks were hatched, an average season hatchability of 62.5 per cent. The average hatchability of the fertile eggs was 82 per cent in the 18 different hatches for which detailed data of the numbers of fertile eggs were available.

The day-old chicks were maintained in the brooder house until they were 4 weeks of age or older and were then sent to the game preserve. Of the 11,516 chicks received at the brooder house, 1,031, or 9 per cent, were considered as abnormal in some respect. The number of deaths in the brooder house was 4,416 chicks, an average mortality of 38.3 per cent for the season; 7,100 chicks, 61.7 per cent of the numbers received at the brooder house, were sent to the game preserve.

The losses of the chicks in the game preserve were negligible.

Inoculations from incubated fertile and infertile eggs and mature quail from the laying flock were negative for *S. bredeney*. *E. communior* was recovered from all of the mature quail.

Agglutination tests of 45 mature quail from the laying flock, with whole blood antigen prepared from the isolated *S. bredeney*, *E. communior* and *E. communis*, and a standard *S. pullorum* whole blood antigen, did not reveal the presence of agglutinins for either one of the antigens.

The hygienic practices in the incubators were unsatisfactory and it is possible that the incubators were contaminated with *S. bredeney*. The wide range of humidity in the incubators, the management of the incubators and the numbers of abnormal chicks sent to the brooder house probably contributed to the production of a weak chick which may have furnished a fertile source for the invasion of *S. bredeney*, the infection occurring possibly from the time of hatching.

The data presented did not indicate that *S. bredeney* was of ovarian transmission in this particular enzoötic.

Further Studies on the Propagation of Fowl Leucosis in Chick Embryos by Intravenous Inoculation

W. J. HALL, D.V.M., and MORRIS POLLARD, D.V.M., M.Sc.

Continuing the study briefly reported in 1940 on the propagation of fowl leucosis in chick embryos by intravenous inoculation, the leucosis agent was carried through 30 passages in the course of which over 2,600 chick embryos were used.

The method of inoculation was the one described by Eichhorn in which a large vein is located by candling, and a piece of shell approximately ¼" x ⅜" is removed directly over the vein, the shell membrane being left intact. The shell membrane is rendered transparent by the application of a small amount of mineral oil, thus revealing the vein which is firmly adherent to the shell membrane. Injection of blood into or withdrawal from the embryonic vein is accomplished by means of a 27-gauge needle attached to a 1-cc. tuberculin-type syringe. The importance of a sharp, flawless needle is emphasized to obviate post-injection hemorrhage. By this technic blood smears

may be obtained two or three times without sacrificing the embryo.

Leucosis of the chick embryo is characterized by marked gross and histologic changes. The liver, spleen and kidneys are enlarged. The liver and spleen are red to gray red and sometimes contain small, gray foci. Histologically there is a marked intravascular and perivascular lymphoid infiltration in the liver, spleen and kidneys. Areas of focal necrosis are frequently seen in the liver and spleen.

During 30 serial passages of the leucosis agent in chick embryos, 2,656 chicks were used of which 1,089, or 41 per cent, developed leucosis either as embryos or within about a week after hatching. The incubation period and course of leucosis in the embryo averaged 7.4 days, while the corresponding period in embryos which resisted the agent long enough to hatch was 14.8 days. On account of the rapid degeneration of embryonic tissues after death in the heat of the incubator, a diagnosis was not made in 1,257, or 47.3 per cent, of the total inoculated. By an improved technic, however, the percentage of "undetermined" cases was substantially reduced in the later passages.

Preliminary Report on Interspecies Transmission of Avian Leucosis in Embryos

MORRIS POLLARD, D.V.M., M.Sc., and W. J. HALL, D.V.M.

Developing embryos of heterologous avian species, *e.g.*, turkeys, ducks, quail, pheasants and guinea fowls, were inoculated intravenously with blood from leucotic chicks and chick embryos. Blood smears were made at regular intervals from small allantoic veins so that the development of the disease could be observed. When the embryo was considered suitably affected, blood was withdrawn from a large allantoic blood vessel for transfer to both homologous and heterologous species of embryos and hatched-out chicks. The successful transmission of the disease to the various species was characterized by the appearance in progressively increasing numbers of hemocytoblasts in the peripheral circulation.

The gross pathologic lesions which were induced with the disease in all of the heterologous species were similar to those which were observed in the leucotic chick embryo. The liver, spleen and kidneys were enlarged and frequently colored red. Microscopically the tissue impression smears of these organs exhibited numerous anaplastic cells; tissue sections of some of these organs demonstrated both intra- and extravascular involvement.

Of 85 turkey embryos inoculated with leucotic blood, 73 (85.8%) developed the fatal leucotic dyscrasia after an average post-inoculation period of 8.8 days. Fatal leucosis was induced in 16 of the 57 duck embryos (28.1%) after an average post-inoculation period of 7.9 days; and in 22 of 25 guinea fowl embryos (88%) after an average period of 6.2 days. Nine of ten quail embryos (90%) and eight of nine pheasant embryos (88.8%) developed fatal leucosis in an average of 5.5 days and 6.87 days, respectively, after inoculation.

Up to the present time no alteration in the character of the hemocytologic response in these various species has been detected. Leucosis has been transferred *in ovo* from the chick to the turkey and from the turkey to the duck, guinea fowl and quail. It has similarly been transferred from chicks to pheasants and from the latter species to quail, and from chicks to guinea fowls and from the latter to pheasants. It has been transferred through three generations in turkey embryos, two in ducks and two in the guinea fowl embryos.

The question of whether this constitutes a heteroplastic transplantation of the leucemic cell or a transfer of an autonomous leucotic agent still must be determined, since transfer with cell-free inoculums has not been made extensively.

Serial Passage of Strain 3, Lymphomatosis-Osteopetrosis in Chickens

C. A. BRANDLY, D.V.M., M.S.,
N. M. NELSON, D.V.M., M.Sc., and
G. E. COTTRAL, D.V.M.

Six serial passages were accomplished in chickens with the strain 3 agent, lymphomatosis-osteopetrosis. The first passage was initiated with the blood of three White Leghorn hens showing ocular and neural lymphomatosis. The osteopetrotic manifestations seen with strain 3, both gross and microscopic, resemble essentially those described for *Osteopetrosis gallinarum* by Jungherr and Landauer (1938). For the purposes of this paper, osteopetrosis has been designated and recorded separately from other expressions of lymphomatosis.

The combined incidence of the various manifestations of lymphomatosis and of osteopetrosis in 884 chickens of the six passages inoculated at 1 to 22 days of age was 361, or 40.8 per cent of the inoculated birds. Osteopetrosis was detected in 80 birds, or 9 per cent, of the inoculated group. Of those which developed lesions of lymphomatosis and/or osteopetrosis, 79, or 21.9 per cent, showed gross evidence of osteopetrosis and some of these were confirmed by microscopic evidence. Among 775 uninoculated contact and non-contact control birds, 164, or 21.2 per cent, showed lesions of lymphomatosis. With the possible exception of one clinical case still living, osteopetrosis did not occur in either control group. The post-inoculation observation period has not been completed in 159 birds of the fifth and sixth passage series.

The frequent occurrence of lymphomatosis and the virtual absence of osteopetrosis in the control groups may predicate epizoötiologic and/or etiologic differences. Further possible evidence of such differences may lie in the significantly higher incidence of osteopetrosis in males than in females. In contrast, lymphomatosis (neural, ocular and visceral) was seen in a higher percentage of females than in males, both inoculated and uninoculated.

Apparent differences in strain and family susceptibility to osteopetrosis were observed. Two of nine strains of White Leghorns failed to show manifestations of osteopetrosis, while one of the other strains showed a morbidity of 12.7 per cent.

Further Observations on a Blood Protozoon of Turkeys Transmitted by Simulium Nigroparvum (Twinn)

E. P. JOHNSON, D.V.M., M.S., Ph.D.

In histopathologic studies of tissues from 21 turkeys infected with *Leucocytozoon smithi* and killed 24 hours to 12 days after the injections, no schizogonous stages of this protozoon were found.

From continued observations it is concluded that the gametocytes of this protozoon as observed in the blood of affected turkeys occur in the plasma and not in any host cell.

In a further study of turkeys which were infected with this parasite and in which numerous gametocytes could be demonstrated in the peripheral blood for several months, when kept screened away from flies for a year gametocytes did not recur in their blood, while in control turkeys exposed to flies, gametocytes did recur, indicating that asexual reproduction of the parasite did not take place in the turkey.

The oöcyst stage occurs in the stomach wall of *Simulium nigroparvum* and not on the wall similarly to malaria organisms in the mosquito.

From this work it appears that the life cycle of *L. smithi* as it occurs in turkeys and in *S. nigroparvum* is as follows: Macro- and micro-gametocytes are taken into the stomach of these blackflies while engorging on blood from infected turkeys. These develop into macro- and micro-gametes, respectively, and after fertilization the re-

sulting zygote uncoils in the stomach of the fly to become a motile oökinete which finds its way into the stomach wall where it rounds up to become an oöcyst. The oöcyst, after maturing, ruptures to release sporozoites which find their way to the lumen of the salivary glands of the fly. When these infected flies bite turkeys, the sporozoites enter the blood stream of the turkey where they develop in the plasma into gametocytes.

Transmission of Avian Encephalomyelitis

H. VAN ROEKEL, D.V.M., Ph.D.,
K. L. BULLIS, D.V.M., M.S., and
MIRIAM K. CLARKE, B.A., M.S.

The mode of transmission of the avian encephalomyelitis virus under natural conditions has been of great concern to those associated with the poultry industry. Histories of some natural outbreaks strongly suggest that the disease might be egg-borne. Investigations regarding this phase of the disease have been made and consist of three parts: first, a study of the behavior of progeny produced from females which have survived an attack of avian encephalomyelitis; second, a study of the effect of the virus when inoculated into fresh eggs just prior to the time of incubation; and, third, a study of the effect of the virus when inoculated into 10- to 11-day-old embryos.

Twenty-six pullets which survived an attack of avian encephalomyelitis and originated from seven different flocks were selected for breeding purposes. The symptoms manifested at sexual maturity varied from slight to marked ataxia, and in some cases a head and neck tremor, and marked excitability. Sexual maturity was retarded and egg production was low in some instances. Among 1,146 eggs incubated during the months of October, November and December 1938, 72.7 per cent were fertile and 83 per cent of the fertile eggs hatched. The fertility, hatchability and livability were low in some instances, but could not be definitely correlated with the degree of symptomatology. The progeny were observed for 3½ to 5 weeks and among 696 chicks hatched, 98 (14%) died; the remainder were destroyed. No positive evidence of avian encephalomyelitis was noted among the chicks. A second hatching trial conducted several months later with part of the birds used in the first trial produced similar results.

Fresh eggs obtained from breeding stock with a history free from avian encephalomyelitis were inoculated with 0.1 to 0.3 cc. of saline brain suspension prepared from chicks affected with the disease. A total of 807 eggs were inoculated in nine different trials and placed in an incubator. Fertility and hatchability (based on fertile eggs only) were 74 per cent and 25 per cent, respectively. Among the 149 chicks hatched, 71 showed symptoms of avian encephalomyelitis. Clinical evidence of the disease was noted immediately upon hatching in a few chicks and in the majority of cases symptoms were manifested by the eighth day after hatching. Brain suspensions prepared from affected chicks in several instances were inoculated into normal chicks and produced positive takes.

Embryo inoculation with the virus was carried out in twelve different trials. A total of 370 embryos (10 to 11 days old) were inoculated, which produced 206 chicks. Hatchability in general was lower among the inoculated than uninoculated control embryos. Forty-four (21.4%) of the hatched chicks manifested evidence of avian encephalomyelitis and the results were similar to those obtained in chicks hatched from inoculated fresh eggs.

Although definite evidence was not obtained that the avian encephalomyelitis virus can be transmitted from mature females to their progeny *via* the egg, fresh and embryonated eggs inoculated with the virus produced chicks manifesting typical characteristics of natural outbreaks of the disease. These observations support field data showing that it may be egg-borne.

The Poultry Industry Needs the Veterinarian

J. HOLMES MARTIN, B.S.A., M.S.A., Ph.D.

We are all aware that for the past ten years poultry diseases have taken an undue toll from the poultry industry. During this time the expenditures for medicines, drugs and remedies have mounted along with the mortality.

I am particularly concerned with a threefold lag in the poultry industry as it is related to the veterinary profession. First, I refer to the lag of practitioners in learning about the accurate diagnosis and control of poultry diseases, especially the differential diagnosis of certain diseases of virus and nutritional nature.

A second lag is that of the poultry industry in learning that the veterinary profession has a real service to render the poultryman. The poultryman must think of the practitioner not as someone who might cure his sick chickens, but as one who can advise him on problems of disease control, hygiene and animal health. The poultryman should pay the practitioner for keeping disease out of his flock, rather than for attempting to cure diseased birds.

The industry is gaining confidence in the practitioner as he takes more interest in poultry diseases, becomes more capable of meeting the poultryman's needs, and is expressing this confidence by employing him at a fair fee when results are forthcoming.

The third lag is delayed diagnosis. At present the poultryman does little about the problem of disease in his flock until several weeks have elapsed and a number of birds have died. Here is a situation where an immediate diagnosis would be of untold value in controlling the spread of the infection. In case the poultryman is unaware of the help the local veterinarian could give him (all too many fall in this group), he consults his local hatcheryman, feed dealer, or perhaps the county agricultural agent. In some cases he sends a few sick birds to a central laboratory for diagnosis. The shipment of these diseased birds not only may serve to spread the infection to healthy breeding stock in the same express car, but it also serves to further delay the answer. When the diseased specimens arrive at the laboratory, the diagnostician may need several days to diagnose the case differentially. By the time the diagnosis has been completed and the information is available for the poultryman much of the mortality of consequence has already occurred. In many cases the resistant birds have recuperated and the more susceptible ones have died. In many cases a remedy gets the credit for having cured the resistant birds, which probably would have survived had no medication been used.

Diagnostic laboratories much prefer to have the diagnosis performed in the field by the local veterinarian who is familiar with poultry diseases. In such a case the veterinarian then consults the specialist at the state laboratory only when doubtful or obscure cases occur. The advantage of a field autopsy and diagnosis under the eye of a skilled local veterinarian is that the poultryman gets his answer immediately. Also the diseases are not tracked over the state, and the lapse of time to get the diseased birds to the central laboratory is avoided. However, the veterinarian must have a real service to render if he asks for this expenditure, whereas the remedy maker has mostly promises. Most certainly, the poultry industry would be far better off if a large share of the millions spent for remedies were invested in services, particularly in the matter of diagnosis and recommendations regarding flock health and hygiene.

The fact that many general practitioners have built up a poultry practice in recent years indicates how willingly the poultrymen and farmers will turn to them with their poultry-disease problems.

"He's a very, very sick man but I think I can pull him through," is one agricultural paper's idea of how the medical profession built up its reputation.

Veterinarians and Public Relations

HARRY J. BOYTS, B.S.

Through an expanded program of animal-disease control sponsored by the Sioux City Live Stock Sanitary Committee, improved public relations for accredited veterinarians and the livestock industry are being established. The results are far reaching and there is better understanding of animal-disease control, more practical and safer methods of diagnosis and treatment, greatly improved control of serious contagions, and a new place in the community for qualified veterinarians.

In the nationwide program of tuberculosis eradication, the standing of veterinarians was raised for those who were civic minded, professionally up-to-date and earnestly coöperative. Since 1937, when 1,592 cattle herds and 14 counties were quarantined for anthrax in the Northwest, a new public relations program has been developing which is strongly emphasizing the importance of good veterinary service.

Careful studies and surveys of anthrax problems are bringing out effective control measures. Bankers, creamery operators, county agents, vocational agricultural instructors, livestock and business groups are giving full coöperation to practicing veterinarians who are responsive to the new public relations approach to the problems. The confusion about anthrax vaccination and proper control measures is being eliminated by frank consideration of the problems of handling this disease.

During the past three years sheep scab has been eliminated from the Northwest by a working public relations program. Quarantines for sheep scab were not enforced until the livestock industry supported a definite and well-organized program. This included inspection of all farm flocks, quarantine of infected sheep and thorough dipping. The result has been greater respect for good veterinary service because sheep scab has been eradicated from the whole territory.

Wider distribution of more authentic information for proper diagnosis, treatment and prevention of animal diseases has been developed through attractive "Animal Health" booklets and "Monthly Letters," published by the Sioux City Live Stock Sanitary Committee. The booklets are distributed by business institutions, and the special letters on animal diseases are mailed in sealed envelopes to key livestock men and, more recently, many banks enclose them with statements to prominent farmers. This new program is developing sounder thinking for the general welfare of the livestock business and emphasizing a higher standard for the veterinary profession.

Livestock Transportation

LEWIS P. EAST, B.S.

Aproximately 5½ million farms in the United States produce cattle, nearly 4 million produce hogs, and sheep are produced on a million farms. Last year there were slaughtered under federal inspection in the United States 9,756,000 cattle, 50,389,000 hogs, 17,351,000 sheep, and 5,359,000 calves. All of these animals would have been practically worthless to their producers had there not been quick, efficient and economical services available for transporting them to a point at which there was a demand at a cash value.

Transportation provides probably the most important single service in making possible a large-volume production of livestock for processing into meat and its distribution to consumers everywhere. But when livestock is moved from place to place we must recognize that by inhumane treatment serious losses can be inflicted upon the industry. Furthermore, it goes without saying that unless properly regulated and policed by authorities trained for that purpose, movement of livestock from place to place presents a hazard feared by all producers—the spread of costly communicable and infectious diseases.

Taking cognizance of these facts, legislative authorities as far back as 1884 enacted federal laws conferring upon the Secretary of Agriculture of the United

States certain powers to regulate the manner of delivery and shipment of livestock moving interstate. From these early acts and those subsequent thereto have come our present-day regulations governing interstate movement of livestock.

Simultaneously with the development of these interstate regulations came individual state regulations governing the handling of livestock intrastate, also the handling of interstate livestock after it is terminated in a specific state. All of these regulations were promulgated in the interest of preventing, in so far as possible, the spread of diseases.

About 35 years ago, Congress enacted the 28-hour law, which with its later amendment prescribes the maximum length of time livestock in interstate movement can be confined in railroad cars before it must be unloaded for feed, water and rest. Handling livestock in conformity with the provisions of this law prevents suffering and shrinkage, and the animals are delivered at their destination in the best condition possible.

During the past 15 to 20 years several things have happened to change livestock transportation problems materially. Direct marketing of livestock has grown in opposition to the system of selling and buying at public livestock markets operating under jurisdiction of the Packers and Stockyards Administration of the United States Department of Agriculture. We have seen direct marketing develop both in the instance of livestock for immediate slaughter and in the case of feeder and stocker animals.

Last year, packers purchased outside of public markets 24.9 per cent of the cattle, 53.3 per cent of the hogs and 36.2 per cent of all sheep slaughtered under federal inspection in the United States.

Likewise, farmers in the seven states of Ohio, Indiana, Michigan, Wisconsin, Minnesota, Iowa and Nebraska purchased 29 per cent of their feeder cattle and 68 per cent of their feeder lambs and sheep from sources other than public markets as classified by the Packers and Stockyards Administration.

Along with these changes in marketing methods and the advent of good roads, the tonnage of livestock handled by railroads in the United States declined more than 50 per cent. But during this period there has been a continual increase in the volume of livestock handled by motor truck.

Railroads have voluntarily done a great deal of educational work directed toward reducing losses from crippling, bruising and death of animals occurring enroute. Recommendations have been made as to what constitutes a safe number of head to load of any species at any weight. The railroads are continually coöperating with livestock markets, packers, the National Livestock Loss Prevention Board, humane societies and all other agencies interested in reducing controllable losses of livestock in transit.

Single-Service Containers for Distribution of Fluid Milk

J. RAYMOND SANBORN, B.Sc., Ph.D.

Studies carried out for the past five years show that the commonly used types of paper containers for fluid milk are in a satisfactory bacteriologic and sanitary condition. During this period there have been some improvements in the suitability of these containers for the packaging of this most perishable and most easily contaminated of all foods. These improvements include better moisture proofing, higher percentages of sterility or essential sterility, and greater general cleanliness.

Analysis of research data on the study of quart containers shows that whereas four years ago these containers gave low but appreciable bacterial counts and broth sterility results from 0 to 30 per cent, tests carried out, mostly during 1940, indicate that 75 to 94 per cent of the containers examined yielded plate counts of less than five colonies per container. Percentages of sterility with standard broth varied, with the three types of containers tested, from 69 to 100 in one case; 20 to 66, with a maximum of 87, in another; and 78 in the third instance.

Through the coöperation of mills and

converting plants, important sanitary and specific precautionary developments have been made which are chiefly responsible for the improvements reported. These developments are along the following lines:

1) Production of clean paper and paperboard made from clean and sanitary materials.

2) Effective control of microörganisms throughout manufacturing and fabrication operations.

3) Sanitary protection of stock during all processes of manufacture.

4) Increased efficiency of moisture proofing.

Bacteriologic analyses of the paperboard used for milk-container fabrication have been carried out along with the testing of finished containers. While relatively few mills are at present engaged in the manufacture of milk-container board, the results of the 6,293 analyses reported include a total of 20 mills which have submitted samples since 1937.

Several of the largest producers of this grade of board have undertaken the task of manufacturing an essentially sterile product. The success that has been achieved toward this objective since 1937 and 1938 is reflected in the percentages of counts that are recorded as less than ten colonies per gram of disintegrated stock. During 1937-1938, 16 per cent of the analyses of container body stock thus proved to be relatively free from viable microörganisms. In 1939, the percentage rose to 39; in 1940 to 50; and to 73 during the first half of the present year, which includes, thus far, 706 tests. Covering these same periods, the percentages of analyses giving 100 colonies or less per gram are progressively 59, 92.6, 88 and 99. The more recent results surpass those obtained from the thicker stock used for the ends of some containers which, from the first, has usually yielded somewhat lower counts than body stock.

Improvements in the moisture-proofing efficiency of containers have progressed more slowly than the advancements made in paperboard quality. While some work remains to be accomplished toward establishing conditions which promote uniformity, the past two years have shown improvements in the paraffining efficiency of the various types of containers examined. Milk-penetration studies of containers from nearly 20 different sources, carried out during this period, indicate that in the majority of instances containers are well impregnated and coated with paraffin.

The Producers of Food in War

The great nations of the world, serenely content with the apparent wisdom of their leaders, have again gone to war without first providing themselves with the greatest of all weapons—food for the general population. Only the bulging arsenals for the current needs of the fighters in the field have been played up as sufficient evidence of military preparedness.

News dispatches as of June 1, 1941, show that man who has been at the business of war since the dawn of written history still goes blundering in with little but ordnance and tactics uppermost in mind. Germany, France, Italy and Britain have again cut down the ration of their people to such a level as to forecast a crack-up, not from bombings and sunken battleships, but from the cravings of empty stomachs which, try as they may, no dictators can belittle nor patriots laugh off. No height of chauvinism has ever surmounted hunger and the ugly spectacle of emaciated humanity that undernourishment brings into the foreground, not to mention other sequels that need not be registered here.

The heroes of preparation and of war itself are the farmers, the breeders of livestock, and the veterinarians who guard food supply from sources to destination. Study as one may the military necessities, food production stands at the top, and in ample food for the general population and its uninterrupted distribution lies the road to victory. The lessons of the past should not be overlooked now.

Is Phenothiazine Poisonous to Horses?

H. SCHMIDT,* B.S., D.V.M., T. T. CHRISTIAN, D.V.M., and W. M. SMOTHERMAN, D.V.M.

College Station, Waco and Huntsville, Texas

A NUMBER OF papers have been published praising the efficacy and safety of phenothiazine for the removal of some intestinal parasites of the horse, but comparatively few point out the danger of using this drug in the horse even when given in the therapeutic doses recommended—doses reported to have a therapeutic index of 10-1. Of those who have vouched for the safety of the drug, we need mention only a few.[1-7] Their recommendations are familiar enough to the profession, and to the layman by this time, that we need not quote from them.

Errington and Westerfield[8] were the first to recognize that some danger is attached to the use of phenothiazine in horses and mules. They found therapeutic doses may greatly reduce the number of red blood corpuscles and the hemoglobin content of the same. Grahame, Morgan and Sloane[4] state that in their work with phenothiazine in the horse, "no evidence was obtained of any untoward reaction and although slight malaise was observed in 2 or 3 animals, this may have been due to individual idiosyncrasy."

Taylor and Sanderson[2] also emphasize that in their experiments horses appeared to tolerate this drug well, although in several instances slight inappetence was observed about 24 hours after treatment. Is it not possible that "slight malaise" and "slight inappetence" are the initial symptoms of intoxication following administration of this drug? Blood examinations are not reported by these authors.

The writers had heard rumors of horses dying following the administration of phenothiazine in therapeutic doses for the removal of intestinal parasites, but no published reports could be found in veterinary literature. The first to come to the attention of the writers was that by Hatcher,[9] who gave some precise information on the amount of phenothiazine given, the clinical symptoms and autopsy findings. He mentions the passage of "bloody" and "red" urine. It is assumed from the first statement that he was of the opinion that the urine contained either red blood corpuscles or hemoglobin. Grahame *et al.*[3] and Knowles and Franklin[4] also mention the passage of reddish-brown or red-tinged urine, but state that the red color is derived from the drug.

Report of Cases

One of us (T.T.C.) treated four horses with phenothiazine on November 21, 1940, as follows: Two mature Thoroughbred mares, School's Out and Alma's Baby, were each given 60 Gm. of phenothiazine powder on the feed; one 2-year-old saddle-bred mare, Peavine's Idle, was given 45 Gm. and one yearling Thoroughbred, 30 Gm. Feed was withheld at the evening meal before treatment. None of the four horses showed noticeable symptoms of intoxication after treatment. They soon improved a great deal in appearance. Their diet consisted of wheat bran, oats, prairie hay and a

*Division of Veterinary Science, Texas Agricultural Experiment Station.

[1]Harwood, P. D., Habermann, R. T., Roberts, E. H., and Hunt, W. H.: Preliminary observations on the effectiveness of crude, unconditioned phenothiazine for the removal of worms from horses. Proc. Helminth. Soc. Washington, vii (1940), pp. 18-20.

[2]Taylor, E. L., and Sanderson, K. M.: Phenothiazine—a remarkably efficient anthelmintic. Vet. Rec., lii (1940), pp. 635-647.

[3]Lapage, S.: Experiments on the anthelmintic action of phenothiazine. Vet Rec., lii (1940), pp. 648-657.

[4]Grahame, T., Morgan, D. O., and Sloane, J. E. N.: Report on phenothiazine as an anthelmintic in horses. Vet. Rec., lii (1940), pp. 660-663.

[5]Knowles, R. H., and Franklin, A. V.: Treatment of equine strongylosis by phenothiazine. Vet. Rec., lii (1940), pp. 663-664.

[6]Howell, C. E., and Britton, J. W.: A field trial with phenothiazine as an equine anthelmintic. Cornell Vet., xxx (1940), pp. 526-532.

[7]Habermann, R. T., Harwood, P. D., and Hunt, W. H.: Critical tests with phenothiazine as an anthelmintic in horses. No. Am. Vet., xxii (1941), pp. 85-94.

[8]Errington, B. J., and Westerfield, C.: Phenothiazine as an anthelmintic for horses and mules. Vet. Med., xxxv (1940), pp. 688-693.

[9]Hatcher, W. L.: Phenothiazine poisoning in horses. No. Am. Vet., xxii (1941), pp. 159-160.

little alfalfa hay.

On December 31, 1940, the owner requested another visit to examine some of his other horses. At this time the four horses treated as stated above were in excellent condition. Treatment with phenothiazine was now recommended for ten other horses and, in view of the splendid results previously obtained, the owner consented. Accordingly, ten doses of phenothiazine powder were weighed out and packaged individually. Thus, seven packages containing 60 Gm. each labeled "2 oz. for horse" and three packages containing 30 Gm. each labeled "1 oz. for colt" were delivered to the trainer for administration.

Treatment was started on January 2, 1941, in six mares and one colt. It was completed before dark, but it was too late to treat the remaining mare and two colts. The following horses were treated individually: Adelee, a 6-year-old saddle mare weighing about 1,000 lb.; Gertsdale Majesty, a 13-year-old registered saddle mare weighing about 1,250 lb.; Tretback, a 4-year-old registered Thoroughbred mare, weighing about 1,100 lb.; High Letty, a 5-year-old registered saddle mare; Ida Lee, a 4-year-old registered saddle mare; a Shetland mare and her colt, the latter weighing about 300 lb. The diet consisted of oats, wheat bran and sorghum hay.

When the trainer found the medicated horses not feeding well the morning following treatment, he suspected trouble and did not medicate the three remaining animals.

On the afternoon of January 6, 1941, a call for help came from the owner. Upon arrival, Adelee was down. A molasses-colored urine was dribbling or running in a small stream, almost constantly. The mucosae of the eyes and vulva were anemic and icteric, the temperature 96 F. Strychnine, camphorated oil and calcium gluconate were administered, after which it was possible to get the mare to her feet and take her to the barn, where she was bedded down comfortably. Inquiry elicited the fact that all seven of the treated horses went off feed for two to three days and thereafter had eaten sparingly. The owner remarked that it seemed as if he had a bunch of dead horses on his hands.

On the following morning Adelee was down in the stall, temperature 96 F., mucosae as before or only more anemic, if possible. The mare was up most of the day but very weak; there was slight bowel action of molasses-colored stools. She died during the night.

At autopsy the principal changes observed were: fat and subcutaneous tissue, icteric; muscles, bright brick red; intestine and lungs, brownish yellow; kidneys, parenchymatous degeneration, of a brick-red color, and on section a brownish fluid exuded from the uriniferous tubules; spleen, enormously enlarged and the pulpa broken down into a dark reddish-brown, semi-liquid mass; colon, gorged with fecal material.

On the following day, January 8, 1941, Gertsdale Majesty and Tretback were reported not doing well. The former showed a temperature of 102.8 F. and the latter 103.6, and both had been practically off feed since being medicated. Gertsdale Majesty had passed a few pellets of fecal material of a dark, sorghum molasses-like color and mixed with dark mucus. Tretback was nervous and uneasy. Both mares were given arecolin. No improvement was noted in the two mares the next two days (January 9 and 10). On the latter day another mare, High Letty, was reported very sick, but was not treated.

On January 11, Tretback and High Letty were holding their own, but Gertsdale Majesty was worse and died that night. The next morning the senior author was called into consultation and for the autopsy, which unfortunately could not be held until 2:00 p. m. At this time postmortem changes were rather advanced, but roughly the same lesions could be observed as in the first mare. The following in particular were observed: spleen somewhat enlarged and quite soft, kidneys noticeably larger than normal, heart large, fibrinous peritonitis on the diaphragmatic and parietal peritoneum and on the apposing colon, a definite area of superficial mucosal necrosis in the large intestine, dirty-red urine in the bladder.

After the autopsy the remaining horses on the farm were visited. The owner was upset about the whole matter and feared that Tretback also might die. She appeared active enough, but was weak and her mucosae were pale and muddy yellow. Blood samples were drawn and citrated from all five of the remaining medicated horses, from three of the four horses treated with phenothiazine on November 21, and from one mature mare, Miss Watson, not previously medicated. From the rapid sedimentation of the red blood cells observed in the tubes it soon became apparent that some of the recently medicated horses were suffering from an anemia and, accordingly, preparations for blood transfusions were made. Transfusions were given on the afternoon of the following day, January 13, after Tretback and High Letty each had been given 100 cc. of normal horse serum in the morning. High Letty was down and showed all of the symptoms previously observed in the two mares which died. After 750 cc. of citrated blood was given, she was released and started to eat and drink. Tretback was then given a transfusion of 500 cc., and she, too, started to eat immediately. This was the first time these mares had eaten since they took sick.

The blood samples drawn from the horses were carried to College Station and the volume of packed red blood corpuscles determined. The results are shown in table I.

TABLE I—Disclosures of Blood Examinations

NAME OF HORSE	DOSE OF PHENOTHIAZINE (GM.) 1-2-41	HEMATOCRIT READING (PER CENT) 1-12-41
High Letty	60	13.4
Tretback	60	21
Shetland mare	60	11.5
Shetland colt	30	18
Ida Lee	60	33
Alma's Baby	Treated 11-21-40	41
School's Out	Treated 11-21-40	40.5
Peavine's Idle	Treated 11-21-40	35
Miss Watson	Not treated	33

On February 12, 1941, at 1:30 p. m. a Palomino mare weighing about 1,000 lb. was given 100 Gm. of phenothiazine powder on her feed, consisting of oats with some molasses. She consumed all of it. At the same time four yearling colts weighing about 375 lb. each, were fed 300 Gm. of phenothiazine as a group in a similar manner. The phenothiazine was prescribed by a veterinarian and weighed by a druggist, and was fed by the attendant. Two days later some of the animals were sick and, as the attending veterinarian could not be reached, one of us (W. M. S.) was called to treat the sick horses. Upon arrival at the barn at about 2:30 p. m., one of the yearling colts was dead and appeared to have been dead for about three hours. The mare and two other colts were stupid and had been passing red urine. The temperature was normal; the mucosae of the eyes and mouth were of a muddy, yellowish color.

A hasty autopsy of the dead colt disclosed a highly inflamed kidney. The hilus of one kidney contained a coagulated mass the size of the end of a thumb, the ureters contained a number of such lumps the size of a pea and the bladder a lump the size of a hen's egg, with the bladder contracted over it. Grossly the other organs appeared normal. This autopsy had hardly been completed when another of the colts died. The animal did not show colicky symptoms. About this time the mare started to show colicky symptoms (about 1½ hours before death). Urine passed before death was of a dark chocolate color and contained small lumps of the same color. About one hour before death she was given a blood transfusion, following which she stood quietly for about 30 minutes. Blood flowing from the needle at the time the transfusion was made was rather dark—tarry.

A third colt died the following night. The colt that lived passed red urine but did not appear sick. No autopsy was performed on the mare and the colt that died during the afternoon because it was felt that they were cases for the veterinarian originally consulted. This veterinarian returned home that night, and, when informed of what had happened, consulted one of us (S) by telephone. Blood transfusion was advised, but this could no longer be given. No autopsy was made of the last three victims.

The exact amount of phenothiazine consumed by each of the four yearling colts is, of course, not known, since they were fed as a group. The observation, however, that the only survivor of the group was passing red urine at the time his companions died is proof that he ate at least a considerable portion of his share. Even if he had consumed none of it, 100 Gm. or less would have constituted the fatal dose for at least one of the three colts that died.

DISCUSSION

In the face of the favorable reports on the use of phenothiazine in the horse and especially the emphasis placed upon its safety by reputable veterinarians, the losses here reported were astonishing. Those still emphasizing the safety of this drug for the horse owe us an explanation in the death of these animals, and the simple statement, "Judged from the bare facts stated, the cause lacks scientific confirmation" is not acceptable. Nor were these horses "poor, weak, or suffering from infectious anemia." The clinical symptoms and autopsy lesions recorded here, although far from being complete and perfect, coincide with those recorded elsewhere. There can be no reasonable doubt that they are directly attributable to the action of the drug. We are aware of the fact that such an arrogant statement is contrary to the published assertion that phenothiazine is "a specific anthelmintic whose specificity lies in having selective action against worm parasites without a comparable action, local or general, on the host."

If our assumption that the deaths must be attributed to phenothiazine is correct, the chemically pure drug is either toxic for the horse, at least under some undetermined conditions, or the drug, as placed on the market by the manufacturer, contained impurities responsible for the toxicity. Anyone who has bought more than one

batch of phenothiazine from the same source has probably noticed the difference in color of the different batches obtained. Such a wide variation in color would hardly speak for the purity of a chemical compound of a definite structural formula.

The observation of Lapage[3] will help to illustrate the situation. He gave a horse 500 Gm. of phenothiazine. The next day the horse was off feed. The mucosae were bronzed—a condition also noted by others but not considered significant. Petechial hemorrhages showed in the vulva around the vestibulum. Forty-nine days later he gave the same horse the same dose, but this time from a different batch of phenothiazine. About eight hours later the animal was uneasy, showed evidence of intestinal discomfort and would not feed. The mucosae of the eyes and mouth were already bronzed and the urine thick and chocolate colored. On the following morning the mucosae were still bronzed, the horse was still listless, the limbs cold and the body temperature 92.2 F. At this time a spectroscopic examination of the blood showed an increase of 10 to 12 per cent of methemoglobin. No sulfemoglobin was present and the blood showed no other abnormalities. On the following day the methemoglobin was only slightly reduced, but eight days later it had practically disappeared. The red cell count, hemoglobin index and color index, taken three times during the eight-day period, remained within normal limits. The mucosae remained bronzed for seven days and the urine was red for nine days. It was still red after all the methemoglobin had disappeared from the blood.

The formation of methemoglobin may also have played a rôle in another case reported by the same author. A 1,323-lb. horse was given 1,000 Gm. of phenothiazine. The animal became sick, the temperature rose to 103 F., accompanied by sweating, weak and fast pulse and cold ears. On the third day after medication the horse was down, struggling for breath, with staring eyes and in great distress.

In citing the last case it is not argued that phenothiazine, in order to pass the test as a safe anthelmintic, should not be toxic in such excess over and above a therapeutic dose, but it is interesting and instructive to note the symptoms that followed the administration of such a large dose, for it does throw some light upon what goes on in the animal body.

CONCLUSIONS

These cases would indicate that there is need for more and especially more precise information as to what happens when Equidae are medicated with phenothiazine. It is important to know that chemically pure phenothiazine is not toxic to horses in what we now assume to be a safe therapeutic dose, and if no impurities can be found in phenothiazine as marketed at the present time, then surely other factors probably contained in the feed must be responsible for these losses. Until we know where the danger lies—the losses observed thus far leave no doubt that there is danger—phenothiazine can not be considered a safe anthelmintic for Equidae.*

COMMENT BY BENJAMIN SCHWARTZ†

It is to be regretted that the authors were not in a position to determine more definitely the reason that the drug was toxic. It would have been of interest and practical value to determine this, since no fatal cases have occurred among the 600 or more horses that have been treated with this drug under conditions of critical observation. Records of these are available in about a dozen articles that have appeared during the past 18 months. I am certain that we shall progress to a bettter knowledge of the merits of phenothiazine as an anthelmintic for the equine species as opportunities arise to determine the underlying causes of the unfavorable reactions occasionally following its use.

An article by Knowles and Blount of the Royal Army Veterinary Corps, entitled "Experimental Observations on Phenothiazine Relative to Treatment of Equine Strongylosis," states that 30 Gm. is now the standard dose employed in army horses because it has been found to be just as efficient as larger doses (40 to 100 Gm.) previously used. The authors state fur-

*Since this manuscript was completed, Fincher and Gibbons (Cornell Vet., xxxi (1941), pp. 220-223) have reported some losses in horses following the administration of phenothiazine.

†Chief, Zoölogical Division, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

The Sectional Incidence of Swine Erysipelas in the United States*

W. T. SPENCER, D.V.S.†
Omaha, Neb.

SWINE ERYSIPELAS in various forms has undoubtedly been present in some sections of the United States for a considerable number of years. It was not recognized, however, as a herd problem of economic importance until 1931 when it was diagnosed in South Dakota and Nebraska. The organism had been isolated from specimens received from Illinois in the early twenties by J. D. Ray, then located at Kansas City, but he did not identify the organism as the swine erysipelas bacillus. Dr. Ray reports finding the same organism in numerous specimens received in the middle twenties from herds located in the San Luis Valley in Colorado. Robert Graham, Champaign, Illinois, writes that:

> Swine erysipelas was observed in Illinois in 1921 by members of our laboratory staff but the diagnosis and significance of the disease was not appreciated until 1930 at which time a special conference on the disease was held at the University.

Following the outbreak in South Dakota and Nebraska in 1931 the disease shortly became active in the adjoining states (Colorado and Minnesota) and during the drouths of 1934 and 1936 it spread rapidly. It was diagnosed in most of the 48 states in the preceding years of 1937 and 1938. The important hog-producing states were the ones most extensively affected. Some sanitary officials attribute the rapid spread to wide areas to the uncontrolled movement of stock pigs through our many community sales. The states in which the infection became widespread are the states where this method of marketing is extensively used.

There is definitely a wide variation in the virulence of the different forms of the disease and in the morbidity. There is also a great variation in the mortality.

Articular infection is common and is responsible for heavy condemnations of carcasses and parts of carcasses at U. S. inspected packing plants.

In February, 1938, I received a letter from Mr. D. J. Smith of the Provision Department of Swift & Company, Omaha, reading in part as follows:

> During the last three weeks we have noticed an unusually large number of arthritis joints in hogs. Wednesday of this week 2 percent of our total kill was affected. This necessitates trimming out these joints and in a large number of cases trimming away almost half of the ham."

On March 30, 1938, I had a letter from Mr. E. J. Kunkel, director of hog buying for the Cudahy Packing Company, stating:

> During the past three months, not only at Omaha, but at some of our other points, the number of hams boned out account of this disease has increased tremendously, and we are at a loss as to the reason for the increase at this particular time. One day last week on a light kill of around 800 hogs we had 30 hams boned account of arthritis joints.

Correspondence with packer managers in the Corn Belt territory indicated there was considerable loss from arthritis and many of them advised it had increased definitely in the past few years. It is generally accepted that a very large percentage of swine

*Presented before the Section on Sanitary Science and Food Hygiene at the 77th annual meeting of the A.V.M.A., Washington, D. C., August 26-30, 1940.

†Regional Manager, National Live Stock Loss Prevention Board.

(*Continued from preceding page*)

ther that phenothiazine is used in powder form and is administered always by admixture with the feed. In the summary they make the following statements: "Phenothiazine in doses of 30 Gm. (0.066 Gm. kilo in the 1,000-lb. horse) is 100 per cent efficient in the treatment of strongylosis. It is non-toxic in therapeutic doses. It is not purgative nor are accessory purgatives required for the effective action because it is both vermicide and vermifuge; its administration is simple and causes very little interference with the normal diet and work. It is inexpensive and supersedes all other forms of treatment for strongylosis in horses."

arthritis is the result of swine erysipelas infection.

The following data taken from reports of the chief of the U. S. Bureau of Animal Industry give the total kill of hogs in U. S. inspected plants and the number of carcasses condemned for arthritis and similar bone diseases for the years indicated:

Year	*Kill*	*Condemned*	*Per Cent*
1919	44,398,389	59	.0001
1924	54,416,481	7,652	.014
1926	40,442,730	6,896	.017
1928	48,347,393	6,297	.013
1933	45,698,053	9,183	.020
1938	32,453,905	6,896	.021
1939	38,656,573	8,314	.021

The heavy and rapid increase of condemnations for arthritis from 1928 to 1933 would indicate that swine erysipelas was active two or three years before it was recognized as an acute problem. Because of the similarity to hog cholera this could easily have happened. As previously stated, the disease was first recognized as a herd problem in South Dakota and Nebraska in 1931 and for the next two or three years was confined generally to these and adjacent states, appearing in acute form in Colorado, Wyoming and Minnesota in 1932 and 1933.

The Journal of the American Veterinary Medical Association, June 1934, page 987, carries a report from Doctors Stiles and Davis, Pathological Laboratory, U. S. Bureau of Animal Industry, Denver, Colorado, that out of a total of 130,950 hogs slaughtered at Denver from October 1932 to February 1933, inclusive, 446 or 0.34 per cent were retained for arthritis.

The U. S. Bureau of Animal Industry has conducted numerous tests of affected joints secured from packing houses at Denver, Sioux City, Sioux Falls and other points and found a large percentage positive to swine erysipelas. Dr. C. L. Davis, Denver, further reports that out of 168 hog specimens of arthritis joints examined between February 1 and June 26, 1939 one hundred fifty-six gave positive agglutination tests and four were negative to swine erysipelas.

To obtain data as to the prevalence of arthritis as found by the inspectors in U. S. inspected packing houses, I requested the Bureau of Animal Industry to compile records at the various establishments under U. S. inspection for a given period. Accordingly, the following instructions were sent to inspectors in charge of meat inspection June 21, 1939 by Dr. E. C. Joss, chief of the Meat Inspection Division:

> During the 20 day period beginning June 26 and ending July 15, you will please cause to be made a special daily record of the hogs found to be affected with arthritis at establishments under your jurisdiction. At the conclusion of the survey period a letter report should be forwarded to the Bureau without delay, which should show—
>
> (a) Number of hogs slaughtered at station during the period.
> (b) Number of hogs affected with arthritis.
> (c) Number of hogs condemned for arthritis or conditions associated with arthritis.
> (d) Number of primal parts principally or wholly removed and condemned for arthritis.
> (e) Brief statement showing in a general way the geographical location from which the hogs slaughtered were obtained, as, for example, 75% of the hogs slaughtered came from California, Arizona, and Nevada; 10% from Texas and Colorado; 15% from Oklahoma and Kansas. The percentage of affected hogs from ..... was about double that of the hogs from .....
>
> It is desirable that the statements be informative as to the geographical location of heavy and light infections in case such differences are noted.

The information submitted in table I was obtained through this survey and furnished me by the chief of the Bureau of Animal Industry.

In June 1939 I directed a questionnaire to the state veterinarians of the 48 states asking for information as to the presence of swine erysipelas infection and, if present, when it was first diagnosed and how many counties were involved in their respective states. I received reports from forty-one state veterinarians; seven not reporting were states where swine production is of little consequence. Eight reported the disease had not been diagnosed in their states. These were Arizona, Connecticut, Louisiana, Massachusetts, New Hampshire,

TABLE I—Numbers of Hogs Slaughtered Under Federal Meat Inspection by Regions; Numbers of Carcasses Retained, Carcasses Condemned, and Primal Parts Condemned on Account of Arthritis, Polyarthritis, and Similar Conditions, June 26 to July 15, 1939

	Total Kill	Number Retained	Carcasses Condemned	Primal Parts Condemned
New England States Delaware New York New Jersey Pennsylvania	221,129 Origins:	1,027 Iowa, Illinois,	16 and states east	13 thereof
Virginia Maryland West Virginia District of Columbia	45,962 Origins:	215 Illinois, Misso	6 uri, Indiana, O	5 hio, and states
		east thereof		
Alabama Florida Georgia	19,063 Origins:	11 Mostly Georg	1 ia and Alabam	0 a
Kentucky Tennessee	40,068 Origins:	91 Local, Tennes	1 see, Georgia, A	0 labama, Cin-
		cinnati Stock	Yards	
Michigan Indiana Ohio	208,881 Origins:	456 Central states	12 , Chicago Stoc	9 k Yards,
		National St	ock Yards	
Minnesota Wisconsin	260,455 Origins:	799 Minnesota, W	57 isconsin, Iowa,	337 North and
		South Dako	ta	
Texas Oklahoma	30,728 Origins:	32 Texas and Ok	5 lahoma	12
North Dakota South Dakota	92,084 Origins:	405 Dakotas, Min	32 nesota, and Io	9 wa
Illinois Iowa Kansas Missouri Nebraska	855,503 Origins:	4,368 Principally fr	313 om these states	723
Rocky Mountain and Pacific Coast States	84,181 Origins:	402 These states a	36 nd those imme	76 diately ad-
		jacent on e	ast	

Utah, Washington and Maine. Fifteen states reported extensive infection in 1939 as follows:

Arkansas, Georgia, Illinois, Indiana, Idaho, Iowa, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee and Texas. Nine reported infection in two or more counties. These were Colorado, Kansas, Maryland, Michigan, Wisconsin, Wyoming, Oregon, North Carolina and Florida. In the nine remaining states reporting infection the disease was reported to be diagnosed in but few scattered herds; these were the states of New Mexico, Pennsylvania, Kentucky, Rhode Island, New York, California, New Jersey, Nevada and Montana. These reports from authoritative sources indicate swine erysipelas to be rather widely distributed in the important swine-producing states of Iowa, Nebraska, Illinois, Minnesota, South Dakota and Missouri, and in the southern states of Arkansas, Oklahoma, Texas and Georgia which have in recent years become quite important in swine production.

Again in June 1940 I wrote the state veterinarians that had reported infection in 1939 and asked for a statement as to the condition in 1940 to date compared with 1939. Many have replied and in every state

reporting, with but one or two exceptions, there were fewer cases and generally improved conditions in 1940 over 1939, some having rather heavy losses in 1939 reporting no infection to late June 1940. It should be remembered, however, that the incidence of swine erysipelas generally reaches its peak from July to September. These reports indicated a slowing up in the severity of the disease in many of the states, in line with previous history of the disease as recorded by Doctors Van Es and McGrath in their research bulletin No. 84 "Swine Erysipelas" dated August 1936. They stated:

> In the course of certain years the disease is apt to show a marked degree of morbidity after periods of three to five years with a relative low incidence between.

Swine erysipelas infection uses Fifth Column methods of attack. Apparently healthy hogs are often carriers of infection. Some observers believe that 25 per cent of all such hogs from infected districts are carriers of infection. Doctors Van Es and McGrath state:

> The presence of erysipelas bacillus in healthy swine has special inportance in live stock sanitation.
>
> * * *
>
> It has been observed that the bacillus of swine erysipelas may display a capacity to change suddenly from a harmless saprophyte to a decidedly pathogenic parasite. Whether such a phenomenon can be attributed to conditions which exalt the virulence of the microbes per se, or to influences affecting susceptibility of the animals concerned, or to some reciprocal action between these two possible factors remains entirely in the dark. Either one of them, however, may serve to explain the sudden increase in the incidence of swine erysipelas in the course of certain years in areas where the malady occurs enzootically.

It is recognized that difficult problems are involved in the control of swine erysipelas. The necessity, however, is of such great economic importance to the industry that every effort should be made to find satisfactory methods. The timely and most valuable experimental work in this direction conducted in Nebraska by Dr. Van Es and his coöperating associates during the past three or four years has revealed fundamental facts which point the way for establishing adequate regulations.

The Ventilation Problem in Indoor Battery Plants*

M. W. EMMEL, D.V.M., M.S.
Gainesville, Fla.

FOR A NUMBER of years the author has been conducting investigations of fowl paralysis, leucemia and allied conditions in chickens. It has been found that this group of diseases can be induced experimentally by microörganisms of the paratyphoid and typhoid groups associated with intestinal parasites. The evidence indicates that these agents are responsible for the development of this group of diseases under field conditions.

Hemocytoblastosis is a fundamental condition leading to the development of most of the manifestations concerned. Hemocytoblastosis is characterized by the presence of varying numbers of immature and degenerative blood cells in the peripheral circulation and can be diagnosed easily by the examination of blood smears. Difficulties experienced in raising hemocytoblastosis-free birds for experimental purposes and the fact that some of the manifestations under consideration frequently occurred in indoor-hen-battery plants led to a study of battery-plant methods of rearing and maintaining chickens. Investigations have shown that intestinal parasites and microörganisms of the paratyphoid and typhoid groups could not be associated with the mortality problem in indoor-hen-battery plants. Experimental data indicate that indoor-hen-battery mortality and the accompanying syndrome are associated with adverse atmospheric conditions related to inadequate ventilation.

A study of indoor-hen-battery plants indicated that mortality was the most important problem, often ranging from 40 to 60 per cent and being responsible in many instances for the closing of plants. Major mortality occurred as the result of the development of paralysis, leucemia and

*From the Florida Agricultural Experiment Station; presented before the annual meeting of the American Society of Agricultural Engineers, Knoxville, Tenn., June 23-26, 1941.

chronic hemocytoblastosis. Furthermore, a definite syndrome was associated with mortality: (1) irregular egg clutch, (2) frequent and sometimes more or less continuous molting, and (3) poor development of some birds. Blood smears indicated that all birds examined in four battery plants were affected with hemocytoblastosis in varying degrees.

One operator found that recovery occurred when birds showing the first indications of illness were removed from the battery and placed outdoors. A study of four outdoor-hen-battery plants, in which batteries merely were sheltered by a roof, revealed that the mortality and the syndrome occurring in indoor plants existed only in an unusually small degree.

Birds reared under indoor-battery conditions usually show no other manifestations than hemocytoblastosis until about the age of maturity or anytime thereafter. Birds reared to maturity outdoors and then placed in indoor hen batteries develop these manifestations, often more readily than birds reared indoors. Young birds raised in poorly ventilated battery equipment were found to develop a greater degree of hemocytoblastosis than birds raised in more open types of batteries. It was apparent that adequate ventilation is as important to battery equipment as it is to the room housing it. Birds raised under adverse atmospheric conditions were more susceptible to all types of experimental procedures used for inducing fowl paralysis, leucemia and the allied conditions which make the problem of ventilation of prime concern to research workers investigating this group of diseases.

Experiments conducted in one indoor battery extending over a three-year period and in which birds were raised from 1 day to 12 months of age indicated a rather definite biologic saturation point for the room where the experiment was conducted. During the first year 75 day-old chicks were started in this room; at the conclusion of the twelve-month period 42 remained. During the second year 41 of 100 birds were living at the end of the twelve-month period. During the third year, in which only 35 chicks were started, 34 remained at the conclusion of the experiment. Mortality during the first two twelve-month periods was similar to that occurring in indoor-hen-battery plants and deaths began to occur when the birds were 5 months of age. There appears to be a rather definite biologic saturation point for every hen-battery plant. In case the crowding exceeds this point, manifestations caused by the adverse atmospheric conditions occur. The common practice of replacing dead birds merely tends to perpetuate the mortality problem. The laws governing the biologic saturation point of chickens in battery plants are considered to be similar basically to those determined by numerous workers governing the density of habitation in its relation to mortality among fish, insects and other lower forms of life.

The time factor is important in the absence of mortality in the broiler and fryer plant. However, hemocytoblastosis induced in inadequately ventilated broiler and fryer plants leads to at least four definite consequences: (1) lowered resistance to infection, (2) reduced growth rate, (3) poor feathering and (4) lack of uniform growth. High death rate is often observed in broiler and fryer plants where the ventilation is inadequate. Thus, the economics of production in such plants is connected vitally with adequate ventilation. This was strikingly demonstrated by one poultryman who found that the cost of producing a pound of gain increased repeatedly each time the crowding of his broiler plant was increased. This cost of production decreased to its original level when the owner installed a more adequate ventilating system.

The importance of adequate ventilation in battery plants can not be stressed too greatly. It appears that the use of an indoor battery plant economically necessitates some adequate system of forced ventilation. A study is being made of the factors concerned in adverse atmospheric conditions, since temperature, humidity and oxygen-carbon dioxide relations appear to be important.

A study of adequately ventilated plants

indicated that a number of factors are important in correcting adverse atmospheric conditions. Each plant appears to be a specific problem in itself as the environment of the plant seems to be related to the problem. Most poultrymen build a battery house without thinking of adequate ventilation, and still other poultrymen want a certain amount of individuality about their plant which makes proper ventilation difficult. One of the most difficult problems is to adequately ventilate a building that was constructed for some other purpose. It is often hard to convince the owner that the success of an indoor battery plant depends largely upon the installation of an adequate ventilating system and that the decreased cost of production under adequate ventilation will more than compensate for any reasonable sum expended for that purpose.

In the study of the factors favoring adequate ventilation, certain ones seem to be of paramount importance. In case only an intake or exhaust fan is installed, the intake fan under practical conditions appears more important than the exhaust. The intake fan can be aligned so as to circulate air in the room more efficiently than an exhaust fan. The efficiency of exhaust fans is often reduced as far as fresh air intake is concerned by being forced to pull fowl air through ducts. The fresh air supply must be continuous and it should enter near the ceiling or be directed towards the ceiling. In winter the cool air from the outside is mixed with the warm air near the ceiling while in summer in southern climates, some operators have found it advisable to cool the fresh air by means of a water-drip system. The ceiling should be high to allow adequate movement of air over the batteries with no draft on the birds. Outlets should be within 18 in. of the floor and extend either upward through the wall to the loft and out through ventilators or by means of shafts extending through the ceiling. The location of outlet air shafts depends to a large extent upon the size and shape of the room. The size of the intake fan varies with its location and the size and shape of the room. Birds should not be subjected to either direct or indirect drafts from the fan. An intake fan of a capacity calculated to change the air in a room every so often can not be depended upon to furnish adequate ventilation on account of other factors involved. Likewise, the maintenance of a constant temperature is insufficient if other factors are not considered. Many operators reduce the efficiency of ventilating systems in indoor plants by opening windows and doors.

COMMENT

This brief discussion of some of the factors concerned in adequately ventilating a battery plant indicates the complexity of the problem, yet when each of these factors, as well as others, is given proper consideration sufficient ventilation can be assured at a cost which is not prohibitive to the poultryman using this method of housing chickens.

Milking Not Purely Mechanical

The milking of cows is not as purely mechanical as might be supposed. There are psychic factors involved that cause cows to hold or give the milk secreted and collected in the acini and tiny ducts leading therefrom. The process of secretion and that of delivering the milk to the larger channels and out of the teat are two distinct phenomena.

Whether a cow holds or gives her milk depends upon reflexes which either excite or depress the musculature that is said to surround the acini and the small ducts. The exciting agent is the posterior pituitary and the depressor is the adrenal gland, according to a theory expounded by workers at the Minnesota Agricultural Experiment Station in the *Journal of Dairy Science* (March 1941).

If a cow is frightened, angry or out of sorts, the adrenal gland inhibits the letting down of milk. *Per contra*, when everything is serene and normal, the secretion of the pituitary pours in and exerts its well-known contractive action, unmolested, these investigators have demonstrated.

SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Artificially Induced Fibrosis: Story of a Regrettable Fraud*

JAMES FARQUHARSON, D.V.M.
Fort Collins, Colo.

THE SUBJECT was a Hereford bull, 2 years old, admitted to the clinic with large, nodular, fibrous-like masses behind both shoulders, in each fold of the flank, and on the medial side of both thighs. This animal won first prize at a county and state fair. Because of his blood lines, quality and conformation, he was purchased by the present owner from a supposedly reputable Hereford breeder. At that time he was in excellent flesh and show condition. On being used for breeding purposes he lost considerable flesh. The flanks, thighs, and the regions behind the shoulders had begun to sag. The owner's suspicion that paraffin wax had been hypodermically injected in these areas previous to the exhibiting of this bull was confirmed.

The examination revealed a hard, nodular mass in each area. Although sensitive, there was no perceptible increase in the heat of the regions involved. The masses behind the shoulders and in the thighs shortened the stride because of muscular involvement. The paraffin had gravitated somewhat from the original site of injection in each instance.

Diagnosis.—Fibrosis and fibromyositis.

Treatment.—The areas were shaved and the surrounding tissues infiltrated with a 2 per cent solution of procain hydrochloride. The fibrous masses were extirpated and the skin was sutured with No. 3 tension suture.

Pathologic Examination.†—The paraffin did not appear as a large mass, but was divided into innumerable globules of various sizes. Most of them were quite small. There were many infiltrating cells among the globules, most of which were histiocytes with occasionally a small group of lymphocytes and a few scattered eosinophiles. The

Fibrous masses induced by paraffin injections in the thighs.

largest globules were surrounded by phagocytes with considerable cytoplasm. An occasional giant cell had formed. Wherever fibroblasts had formed, new capillaries had penetrated.

Nearer the skin healing was more complete. Islands of the infiltrating cells re-

*From the Department of Surgery and Clinics, Division of Veterinary Medicine, Colorado State College.

†Made by G. S. Harshfield, Colorado State College.

mained, but they were separated by masses of mature connective tissue with hyaline changes in the fibers.

Comment.—It is known that this and other nefarious practices are far too prevalent among cattle breeders. Although breeders of beef cattle are the principal offenders, it is also practiced in the dairy-cattle industry. Many of the tricksters have a better knowledge of materials to use and are not as crude in their technic as the individual in this particular instance. The injection of olive oil, peanut oil, paraffin oil, wax and animal fats is often used to deceive the judge, buyer and public. Such frauds deserve the widest publicity. The public supporting fairs and

Fibrous masses induced by paraffin injections at the shoulder and flank.

shows should be told that they are foolishly spending money to see "stuffed" animals. These fraudulent practices are well known to the fraternity of the purebred cattle industry. The old-time horse trader was a novice compared with the present-day bovine beauty specialist.

It is difficult to understand such ethics of breeders who profess to be interested in the improvement of their particular breed and the livestock industry in general. Contact with breeders of purebred cattle impresses one with the fact that the industry is on a sound basis and apparently in the hands of reputable business men. Yet, equally amazing is the fact that the same men sacrifice their integrity by permitting such fraudulent practices in their own herds—a Jekyll-Hyde complex.

As a rule, the owner does not perform these or other deceitful practices. This knowledge gives him a clear conscience because he can positively state that he has not done such an operation. He knows that it is done, winks at it and, when it is not done, another herdsman is employed who can and will perform the necessary "stuffing" for the good of the breed—and the owner's pocketbook. As the herdsman is usually the skilled artisan of these frauds, the owner naturally claims they were committed without his knowledge or approval. Discharged herdsmen who leave the services of such breeders have the opportunty to expose the secrets of their former employers.

Since veterinarians are often approached on this subject, what should be the stand of our profession? Are we going to approve such operations? If so, why not come out openly by describing such practices in our standard veterinary surgery textbooks under the heading of "Illegal Operations"?

Chloral in Pig Surgery

A 5 per cent solution of chloral hydrate injected into the peritoneal cavity at the rate of 3 cc. per pound of body weight gives excellent results as anesthesia in small pigs. Performing major operations on pigs without anesthesia is cruel. The benefits are legion. There is less difficulty in restraining and positioning the pig, hernias are more easily reduced and abdominal testicles can be located without as much difficulty. During the last two years, I have operated upon nine pigs from 5 to 10 weeks old with one death apparently from the anesthetic. Eight of these were herniated and one was a cryptorchid. Except in anemic, diseased, or stunted pigs, this method seems safe.

The pig is held up by the hind leg and the dose is injected in the pelvic region slightly to one side of the medial line.—*Chas. H. Haasjes, D.V.M., Shelby, Mich.*

Tests of poor dark adaptation are a means of detecting vitamin A deficiency. If not applicable to the diagnosis of this deficiency in animals, it at least suggests the relationship of certain ocular diseases to the intake of vitamin A.

A Parasitic Monstrosity

While inspecting sheep slaughtered at a local abattoir, I found the monstrosity herein described.

Although the freak—a ewe—was slaughtered at the age of 11½ years, the snapshot was taken when she was but 9 months old. It is dated July 1929.

There were five fully developed legs. The accessory limb was pectoral and complete in all respects except for the absence of a scapula. The diarthrodial articulations

The subject at 9 months of age (July 1929). Note how the thoracic limb dangles alongside the neck. (Photo by the owner, Mrs. Simon Sonsalla of Arcadia, Wis.)

were normal as to movement and synovial capsules. The musculature was present, but undeveloped from disuse. The head of the humerus articulated with a tuberosity located on the forehead with which it formed a diarthrodial joint of limited passive action. None of the joints was stiff. The skin of the superfluous limb was wool-covered and had been shorn regularly during life. The parasite hung helpless along the neck down to the level of the shoulder.—*R. L. Cowen, D.V.M., U. S. Bureau of Animal Industry, Winona, Minn.*

The Blood Groups of Cattle

The work of L. C. Ferguson, D.V.M., Department of Veterinary Science, University of Wisconsin, on bovine blood grouping is the subject of a long editorial in the July 26 issue of *The Journal of the American Medical Association.* Ferguson believes that the number of blood groups in cattle may be equal to the total number of bovine chromosomes. The value of this work in human medicine lies in the possible existence of a multiplicity of human blood groups. It may explain the essential etiologic agents in eclampsia, abortion, infantile icterus and fetal erythroblastosis. The work of Panisset and Verge, Alfort (France) veterinarians, on the toxic reactions produced by blood transfusions in cattle is cited.

Fincher and Krill describe six cases of transverse bicornual presentation in mares in *The Cornell Veterinarian* of January 1941. All of the mares were 8 years of age or older. Their ages were 8, 10, 10, 12, 18 and 19 years, respectively. Damaged endometrium of the fundus is ascribed as the cause of this rare but fatal dystocia.

In May (1941) the annual income of the United States hit the $86,000,000,000 rate, the highest in history.

The horn of a rhinoceros killed recently in South Africa measured 5′ 2½″ long. The horn of the rhinoceros is all cutaneous, having no osseous core belonging to the skeleton like the horn of the ruminant.

Approximately 10 per cent of the cattle of Canada are now under supervision for tuberculosis eradication. In the year ending March 1940, 1,674,891 tuberculin tests were made under the area, accredited herd, and supervised herd plans.

According to the developments in farming, it seems probable that loose hay will become a thing of the past to a large extent. The silo is fast replacing the hay mow in farm-building construction.

CLINICAL DATA

Salt is a precious ingredient of horse feed. The intake must be equal to the large amount eliminated with sweat and urine to maintain the normal sodium chloride level.

After the hatching season, roosters should be removed from the layers. Infertile eggs keep fresh longer and chickens lay better when not repeatedly molested by mating.

The chorioallantoic membrane of chick embryos has become an important tissue for the cultivation of viruses. The lesions produced are in many cases characteristic of the infecting virus.—*Science.*

When a nose ring is torn out, two rings may in turn be inserted from above downward through the torn cartilaginous partition and another large ring then fastened into the smaller ones.—*Hoard's Dairyman.*

Foodstuffs for horses in and about London have now been rationed. . . . Such supplies are now obtainable only through official ration cards. Horses must be registered on forms obtainable at any food office.—*Our Dumb Animals.*

Nicotine, fluid alkaloid of tobacco, was named for Jean Nicot, who in 1560, introduced tobacco into France. Except as a vermicide combined with other drugs, nicotine is of no particular value in veterinary medicine.

One of the sequels of sulfapyridine therapy is the formation of concretions in the urinary tract, amounting in some instances to complete impaction of the ureters. Doumashkin and Worton (*N. Y. State J. Med.*, Jan. 15, 1941) attribute the hematuria of sulfapyridine therapy to local tissue laceration, not to toxic nephritis.

The occurrence of variola (cow pox) in cows that recovered from foot-and-mouth disease but one month before is given as proof that the cross immunity between the two viruses that is sometimes claimed does not exist. (*Jacob Jansen, Utrecht. Tydschrift voor Diergeneeskunde, lxvi (Nov. 1939), p. 456.*)

The dose of vitamin C (= ascorbic acid) used to step up the potency of impotent bulls as given by Phillips (*J.A.V.M.A.*, Aug. 1940, p. 165) is 1 to 2 Gm. subcutaneously according to size at intervals of three to four days. In approximates of the apothecary scale, the figures would be 15 gr. per 1,000 lb. of body weight.

Veterinarians are advised by the *Canadian Journal of Comparative Medicine and Veterinary Science* to try sodium citrate in the treatment of lead poisoning, especially of the chronic form. The basis is a report of beneficial results obtained in human medicine. Lead rapidly leaves the blood in the presence of sodium citrate, it is declared.

Santonin, commonly known as the king of the ascaricides and never before thought of as a tapeworm remedy, is being used with good effect to expel tapeworms in dogs. Jaffray of Chicago and Krone of La Grange (Ill.) are advocates of santonin as a taeniacide. A dose of santonin given in the evening and one of arecoline (by the mouth) in the morning is said by these doctors to promptly rid the alimentary canal of tapeworms. A copious enema following the arecoline is an aid to the washing out process.

Carcinoma of the Prostate Gland in Dogs: A Report of Three Cases*

CARL F. SCHLOTTHAUER, V.M.D., and J. A. S. MILLAR, B.S., V.M.D.
Rochester, Minn., and Deal, N. J.

BENIGN HYPERTROPHY of the prostate gland is common in aged dogs, but true neoplasia occurs infrequently. We found reports of only three cases. Roth[1] noted a carcinoma of the prostate gland in a 12-year-old Scottish Terrier. This was classified as carcinoma simplex. Metastasis did not occur. Schnelle[2] observed a carcinoma in the prostate gland of an 11-year-old Airedale. Metastatic growths were present in the long bones and lungs in this case. Sholl, Langhan and Sales[3] noted the occurrence of a neoplasm affecting the prostate gland, kidneys, liver, intestines, heart and tonsils of a Springer Spaniel which was about 18 months of age. They expressed the opinion that the primary neoplasm was situated in the prostate gland. The neoplasm was classified as a round-cell sarcoma.

One of us (C.F.S.) has had an opportunity to examine the prostate gland of a large number of dogs. In more than 500 instances the gland was examined both grossly and microscopically. Many glands were obtained from aged dogs and they presented varying degrees of hypertrophy. Primary neoplasms were observed in the prostate gland in only three of these animals. Because of the apparent infrequent occurrence of neoplasms in the prostate gland of dogs, we are reporting these three cases.

REPORT OF CASES*

Case 1.—The clinical data of this case were not recorded. Examination of the dog, a Pekingese, 8 years of age, revealed marked swelling of the anus and a portion of the rectum was protruding. This was purplish red. A bulging mass adjacent to the anus was thought to contain the urinary bladder. Digital examination

*From the Division of Experimental Medicine, Mayo Foundation, and the Millar Animal Hospital.

[1]Roth, L.: Carcinoma of the prostate in a Scottish Terrier. J.A.V.M.A., xcv (Aug. 1939), p. 232.

[2]Schnelle, G. B.: Veterinary radiology. No. Am. Vet., xx (Sept. 1939), pp. 50-55.

[3]Sholl, L. B., Langham, R., and Sales, E. K.: Two cases of malignant neoplasm in dogs. J.A.V.M.A., xcv (Dec. 1939), pp. 757-759.

*Cases 1 and 2 occurred in the practice of J. A. S. Millar.

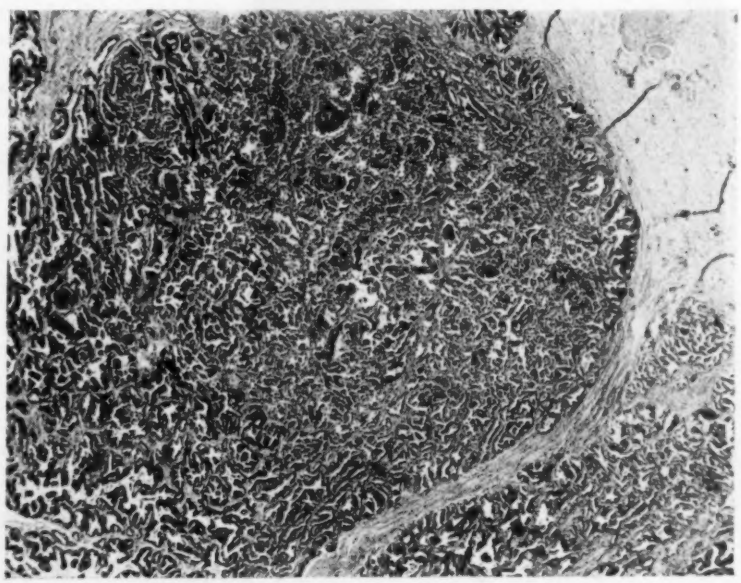


Fig. 1 (case 1). A small region of carcinoma in the prostate gland. The neoplasm is invading the acini (x 25).

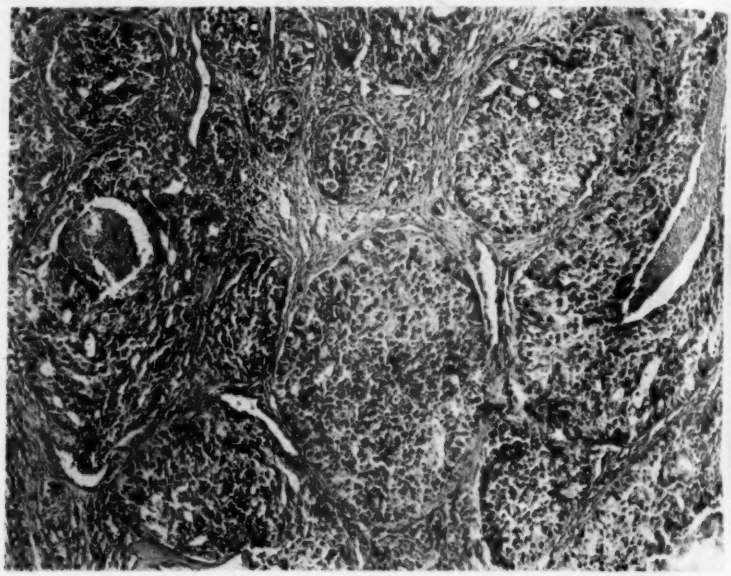


Fig. 2 (case 2). The carcinomatous process was widely disseminated in the prostate gland. Most of the acini were filled with solid masses of cancer cells (x 90).

of the prostate gland through the rectum revealed marked enlargement. Because of the dog's poor condition and its somewhat advanced age, a poor prognosis was given. The owner, therefore, requested that the dog be destroyed.

Necropsy revealed the gland to be enlarged and firm, but all other organs were apparently normal. Microscopic examination disclosed a primary adenocarcinoma. Only a small region was affected, but the neoplastic process was progressive and had invaded all the acini in that region (fig. 1).

Fig. 3 (case 3). Note the nodular appearance of this prostate gland. These nodules could be palpated through the rectum.

Case 2.—The owner stated that this dog, a Collie, 4 years of age, moaned a great deal when resting and that it would attempt to bite if its hind quarters were touched. He also noted that the dog carried its tail arched over the back during the previous week or longer and that it made frequent attempts to void or defecate. It was thought that the animal was constipated.

The temperature was 102.8 F. Examination of the rectum by digital palpation revealed it to be empty and essentially normal, but the prostate gland was enlarged, nodular and firm, and the dog manifested symptoms of pain when the gland was palpated. No other cause for the symptoms was noted and the animal was hospitalized for further observation. Its condition rapidly became worse. Anorexia and watery or mucoid diarrhea developed. Because of its apparently hopeless condition, the dog was destroyed at the owner's request on the fourth day after admission to the hospital.

Necropsy was performed and the prostate gland was removed for microscopic study. Gross examination of the other organs revealed them to be essentially normal.

Microscopic study of the prostate gland disclosed a primary adenocarcinoma. It was affecting nearly all parts of this organ. The cancer cells tended to infiltrate and fill the acini (fig. 2). In some regions nests of cells were noted in the capsule and interstitial tissues. Mitotic figures were abundant.

Case 3.—A Labrador dog, 11 years of age, manifested symptoms suggestive of some disease of the rectum. The owner stated that the

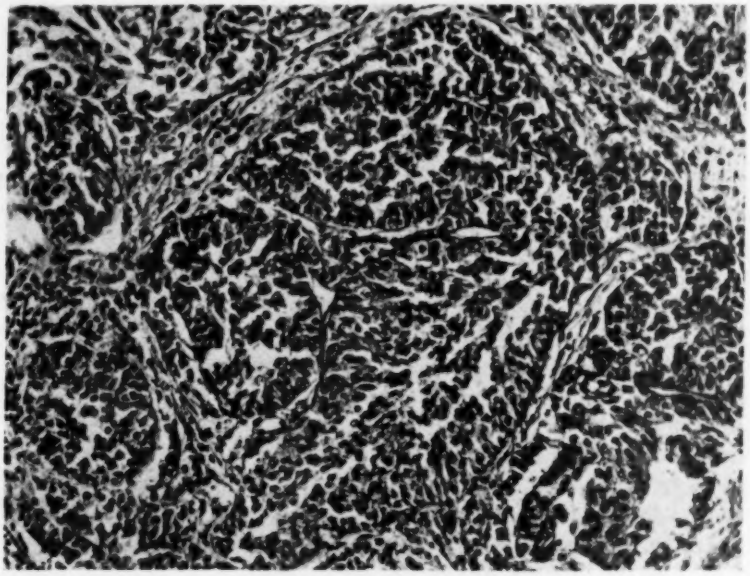


Fig. 4. The carcinomatous process tended to invade and fill the acini and lymph spaces in the prostate gland. In manner of growth it resembles a seminoma (x 175).

dog made too frequent attempts to defecate and that it commonly continued to strain after each bowel movement. After persistent straining it frequently passed a small quantity of mucus and fecal matter. The dog was house trained, but it was noted that it now frequently soiled the house.

The animal was in good physical condition. Its temperature was 101.4 F. and its appetite normal. General examination revealed enlargement of the prostate gland only. This was markedly enlarged, firm and nodular, and a hard nodule could be felt in the upper right posterior pole. The dog manifested symptoms of pain when the gland was palpated. There was no demonstrable obstruction of the urinary tract. The rectum was slightly spastic, but it was otherwise normal.

Because of the absence of elevation of temperature, the progressive nature of the disease and the hard nodular condition of the prostate gland, the presence of a neoplasm in this organ was suspected. Since the dog was of advanced age and was experiencing marked discomfort, the owner requested that it be destroyed.

Examination of the prostate gland at necropsy revealed it to be enlarged and firmly adherent to the rectum. This suggested chronic prostatitis, but it was more hard and nodular than the ordinary inflamed or hypertrophied prostate gland (fig. 3). It was slightly more than 5 cm. in its transverse diameter and weighed 88 Gm. When the gland was cut across, a hard nodule resembling a soft stone was encountered in the upper right posterior portion. Much of the gland was spongy or cystic and resembled one that was undergoing cystadenomatous hypertrophy, but in some regions a firm, white tissue was seen to infiltrate the gland. The prostatic portion of the urethra was not obstructed.

Microscopic examination revealed the presence of a highly malignant adenocarcinoma similar to that noted in case 2. This neoplasm was classified by Broders as a primary carcinoma of the prostate gland, grade 4. It appeared to be infiltrating the acini, perineural sheaths and lymphatic spaces in the capsule and stroma. Some of the acini were entirely filled with cancer cells (fig. 4). In manner of growth the neoplasm resembled a seminoma. The cancer cells tended to form nodules in the stroma. A similar neoplasm was observed in the prostate gland of a monkey by Engle and Stout.[4]

COMMENT

Persistent straining as if attempting to defecate is not a specific symptom of any one condition or disease in the dog. It has been observed in dogs affected with various conditions or diseases of the rectum, such as stricture, foreign bodies, impaction, megacolon and carcinoma. It also has been observed in dogs affected with tumors of the anus and pelvis, and is often noted in dogs affected with diseases of the prostate gland. Pain is a common symptom of carcinoma of the prostate. This may be due to the fact that the neoplastic process com-

[4]Engle, E. T., and Stout, A. P.: Spontaneous primary carcinoma of the prostate in a monkey (*Macaca mulatta*). Am. J. Cancer, xxxix (July 1940), pp. 334-337.

An Electrocutor for Animals*

E. A. BENBROOK, V.M.D., and R. A. RUNNELLS, D.V.M., M.S.
Ames, Iowa

THE VETERINARIAN frequently has to destroy animals in order to hasten a diagnosis, to reduce excess population, to dispose of hopelessly injured or aged animals, to stop the activities of dangerous animals, or to prepare animals for food.

Whatever method is used, it should approach as nearly as possible the following ideals: It should be humane, quick, convenient, quiet, safe for other animals or man or property, inexpensive and with minimum damage to tissues.

Apparently no single method is satisfactory under all circumstances. Electrocution has been used for many years in one form or another and is advantageous when adequate current is available. This method has been used for the past two years in the postmortem laboratory and in the diagnostic laboratory at Iowa State College. In the beginning there was employed an ordinary twisted lamp cord with battery clips as terminals. The clips were attached to the animal and the cord was then plugged into a convenient 115-volt, 60-cycle alternating current outlet. This worked well on all types of domesticated animals and birds. Later, to reduce the element of danger to a minimum, a heavier, rubber-insulated cord was used, connected to a shockproof switch having a red pilot lamp (fig. 1). When the red pilot lamp is burning, it indicates that the current is on; hence, neither the terminals nor the animal should be touched until after the current is switched off. In order to add other factors of safety, rubber gloves may be worn by the operator, and when the electrocutor is not in use, the switch may be padlocked in the open position.

To operate the electrocutor, the terminal clips (F) are attached to the animal (as noted later), then the cord is plugged in

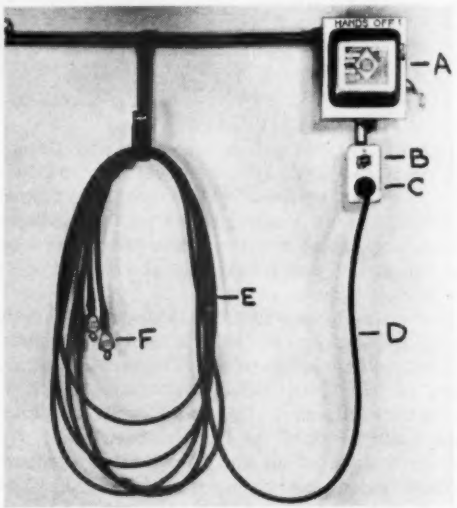


Fig. 1. Animal electrocutor. (A) Switch. (B) Pilot light. (C) Outlet and plug. (D) Rubber-insulated service cord. (E) Soldered terminal connections. (F) Battery clips.

at (C) and the switch (A) is closed, which lights the pilot lamp (B), indicating that the cord is "hot." The animal stiffens out immediately and after about 30 seconds the legs on the upper side of the body begin to relax toward the floor. Full contact for 45 to 60 seconds will kill a chicken, but larger animals up to the horse require from one to two minutes before the current is cut off. Respiration ceases when the current is applied and the animal makes no sound or motion.

The places for attachment of the terminals are important. The clips should be

*From the Department of Veterinary Pathology, Iowa State College.

(*Continued from preceding page*)

monly invades the perineural spaces and impinges on the nerves. Evidence of pain was noted in cases 2 and 3. Symptoms or evidence of disease of the rectum was manifested by all three animals. Symptoms similar to those observed in case 3 were noted by Roth in the case that he reported.

pinched firmly and directly into the tissues so that the current passes through the length of the body. For horses, cattle, sheep, goats and swine one terminal is clipped to the commissure of the lip and the other to the anus (or vulva in females). The clips must be kept free from hair, wool, feathers or fecal matter.

For swine a rope may be attached to one hind leg to restrict movement after the terminals are applied. For dogs and cats a muzzle may be used if necessary; then one terminal is attached firmly to the skin just back of the head and the other terminal is attached in front of the tail. If the animal is heavily haired, a small patch may be clipped away with scissors and the skin moistened with water before applying the clips. When used on birds, one terminal is attached to the comb and the other to the margin of the vent.

The length of the cord may depend upon circumstances. It is better to have it too long rather than too short because some animals may move about before the current is applied. The cord illustrated is about 25 ft. long from the plug (C) to the soldered splice (E) and each terminal portion from (E) to the clips (F) is about 12 ft.

The entire electrocutor including installation costs about eight to ten dollars. A cord, plug and clips, if used without the switch, should, of course, cost much less.

Following is a list of materials used on the installation:

1 switch, 30 amp., 2 pole, Colt Noark, fused, No. 8683
1 Bakelite pilot, Pass and Seymour, No. 1340
1 single Pass and Seymour convenience outlet, No. 1320
1 Brownie box, No. 500
1 galvanized Brownie box cover, No. 273
1 Bakelite attachment plug cap
50 ft. No. 16, two-conductor super service cord
2 battery clips, No. 24A
4 stud bolt anchors, ½ x 2½ in.
2 insulators, No. 29 (for the clip terminals)
1 double pole plug (for the service cord)
1 cord hanger of strap iron
Conduit as required

Mineral oil mixed evenly through bran (1½ gal. per sack) and fed as a mash is helpful in the treatment of coccidiosis in domestic fowls.

The Sulfonamide Compounds in Pneumonia

If we are to go on prescribing the sulfonamide compounds in pneumonia, the use must not be based upon their effects on the pneumococci affecting the lungs of the human being, since that microörganism is not a factor in spontaneous pneumonia of domestic animals. The figured organisms for which the viruses of influenza of horses and swine, for example, pave the way are not pneumococci of the various types isolated in the lungs of the human patient.

Although there is every reason to hope that this type of chemotherapy may inhibit the flora of bronchopneumonia of animal patients, as clinical observations appear to show, there is yet no scientific basis for its use therein. We are aware that experimental pneumococcal infections can be produced in animals with massive doses of type III pneumococcus and that the experimental infection has been used to determine the action of sulfonamide compounds, but the dynamics of the drug observed in that experimental work are not applicable to the pneumonias we know in the practice of veterinary medicine.

Insect Exterminator

An apparatus intended for the extermination of insects is being introduced to veterinarians. It is said to kill instantly insects of all kinds that infest plants, man, animals, and places of human habitation: homes, institutions, stores, etc. Its rays are alleged to be lethal for insects but harmless for higher life.

The outfit is comprised of a gold-plated reflector with a special electric bulb and connection for any 110 to 120 volt A.C. electric outlet. It works like an ordinary electric lamp except for the type of rays generated.

Convenience and rapid effectiveness for insect-pest extermination are claimed for it. The merits of the new apparatus and its scientific background are under investigation by the JOURNAL and will be reported in a coming issue.

EDITORIAL

Fortifying Foods with Vitamins: Vitamin Therapeusis

THAT MANY FOODS are vitamin deficient is not debatable, but fortifying them by rule of thumb with the vitamins they lack is not as simple as the public is being led to believe. Knowledge of vitamins is complicating, not simplifying, the problems of medical science, contrary to the growing impression that health in the future will be maintained by merely mixing a given quantity of ready-made vitamins with presumably vitamin-deficient food.

True, definite avitaminoses have been syndromized and specific chemicals to prevent or cure them have been isolated. But despite the known facts in this connection, scientists of the research laboratories and experts of the food industries are able to contend, logically, that vitamin therapeutics must forever remain one of the intricate problems of medicine. The disease must be diagnosed and the remedy prescribed with profound knowledge of medicine as the basis. The actual vitamin requirement of the living body of man or animal has individual variations and so has the vitamin content of foodstuffs. Opinions as to these two factors at the present time are not in accord, nor are the available methods of making the determinations simple enough or mathematically exact enough to sanction unchallenged the framing of laws and regulations designed to protect the public against vitamin deficiencies in the food purchased. Published percentages differ widely on both scores. In short, vitamin therapeutics is a problem of medicine, not of arithmetic. The physiopathologic states known as clinical and prodromal avitaminoses have to be considered, and these lie only in the province of medical science and practice.

One may well question the trend of the hour which is leading the miller and baker and meat packer to tell the amount of this or that vitamin their products contain, since checking the statements printed on labels would be an impossible undertaking. The tonnage of food is too tremendous and the testers are too few. Moreover, the wide range of vitamin values obtained by analyses and the still wider range of ideas as to just how much of each the vital functions require are more apt to increase fraudulent claims than to decrease them—more apt to create a false sense of security than a true one. That is to say, fortifying food with vitamins on the basis of present known facts and turning the whole problem of deficiency disease over to the general population is putting medical quackery in high gear on the wrong side of the highway where the inevitable crash will probably restore the common sense which has enabled medical science to march forward. The hunger for medical knowledge in the lay *royaume* was never more beautifully illustrated than by the clamor for foods allegedly fortified with supposedly missing ingredients. There is nothing comparable since Pasteur and Koch frightened the world with the discloses of their microscopes and guinea pigs.

VITAMIN THERAPEUSIS

The popularity of natural and synthetic vitamins at the present time is an example of history repeating itself when medical science takes a step forward. In fact, but for the wisdom of level heads such therapeutic swings would take the practice of medicine entirely out of the bounds of reason. Figuratively speaking, the train of

medicine seems to run wild at times but, happily, manages to keep on the rails. The more thoughtful follow the old maxim:

> Be not the last by whom the new is tried,
> Nor yet the first to lay the old aside.

Governed by this proverb, the old practitioner is not easy to stampede.

In regard to the vitamin therapeusis that has been taking the veterinary profession by storm, the thoughtful man of medicine does not forget that proteins, carbohydrates, fats and certain minerals are the essentials of nutrition and that the ratio of them in the food is what builds up the structure of the living being. While knowledge of the vitamins these ingredients of food contain is significant, the matrices conveying them to the site of usage must still be regarded as the fundamental of somatic integration. It is no more scientific to give groups of vitamins in the vague hope that one of them will correct the trouble at hand than it would be to prescribe the blunderbus mixtures of the old apothecaries. The fact that there is a diagnosis to be made and deficiency syndromes to identify is a burden on clinical medicine that has to be overcome by study. There is no logic in loading up the body with vitamins not needed, notwithstanding that no perceptible harm will be done and, moreover, we have yet to learn more about the pathologic factors which block the absorption and utilization of vitamins even when the intake is ample. In other words, the clinical pathology of most of the avitaminoses is still shrouded in considerable mystery and, therefore, scientific vitamin therapeusis lies in the future.

Foot-and-Mouth Disease in Eire

Commenting on the foot-and-mouth disease situation in Eire (S. Ireland), the reporter for *The Veterinary Record* says: "The Minister of Agriculture (of Eire) mentioned a farm where the veterinary inspectors were met with pitchforks and told not to come in."

In livestock sanitation the thing called liberty, freedom, individual rights, or what have you, seems to be translated as a license to violate law to the detriment of others. We, too, have seen pitchfork brigades and bombers marching to the tempo of freedom in the effort to protect a fool's paradise.

Dislocating the Veterinary Service

THAT MASTERING diseases of farm animals is an imperative step of military preparedness is incontrovertible. Except for certain small grains which would soon be exhausted, there is no surplus food supply in this country. The supply and demand for food run parallel. When the supply is curtailed, fats and proteins of animal origin on the food market rapidly decline and cause widespread undernourishment. On that account, it is the duty of the veterinary profession to emphasize the wisdom of expanding its task. Drafting practitioners into the service for training as private soldiers and taking students from the veterinary schools are evils to be pointed out and corrected without delay, for in sufficient personnel lies the basis of animal-disease control.

The world is in a plight—a plight without precedent. No one can envisage the world of the near future. Animal diseases have made whole populations flee to the sea to save their lives, and the world today has no means of preventing that kind of history from repeating itself except its veterinary service. To say that the entire gamut of military and naval preparedness can be made inert by merely dislocating the veterinary service is not chatter. It is a question for wise thinking, since in the dramatic development of defense forces, the civilian needs, upon which national security actually rests, are apt to be overlooked until it is too late.

In view of the fact that the United States is none too well supplied with college-trained veterinarians in the rural regions, not a single one should be removed from his practice except to serve the army in a professional capacity, when actually needed, and the graduating of recruits should not be interrupted.

Department of Agriculture Officials Enjoined in Organizing Farmers

Memorandum No. 893 of Secretary of Agriculture Claude B. Wickard is a document of tremendous importance to the veterinary profession that seems to have escaped general notice. It is a direct order to officials and employés of the Department to refrain from participating in the organizing of farmers or other groups. The full text of the memorandum follows:

Recently, reports have reached the Department of Agriculture that officers or employees of the Department have participated actively in meetings and in other activities concerned with the establishment of general farm organizations, or with recruiting members for existing farm organizations.

It has long been the established policy of this Department that its officers and employees shall refrain from taking any part in activities of this type. This is a necessary corollary of the equally long-established policy of the Department that it shall deal fairly with all farm organizations and deal with each upon the same basis.

As a continuation of this policy, it should be understood by all officers and employees of the Department that it is not permissible for any of them to

1. Participate in establishing any general farm organization, or hold any other office therein.

2. Act as organizer for any such general farm organization, or hold any other office therein.

3. Act as financial or business agent for any general farm organization.

4. Participate in any way in any membership campaign or other activity designed to recruit members for any such organization.

The phrase "general farm organization" used in this memorandum is intended to refer to such national, regional, or State farm organizations as, among others, the National Grange, The American Farm Bureau Federation, The Farmers' Union, the Farmers' Equity League, the Missouri Farmers' Association, the Farmers' Holiday Association, and their regional, State, and local constituent groups.

This statement should not be construed as implying an unfriendly attitude toward farm organizations. Farmers, like other great economic groups in our society, require non-governmental organizations through which they may develop and express their hopes, aspirations, and desires; through which they may make our democratic processes vital; through which, collectively, they may reach the right people at the right time. But the Department must distinguish clearly between what it is proper for a non-governmental farm organization to do, and what it is proper for a governmental employee to do. The same reasoning which led to the Congressional enactment that governmental employees should not directly or indirectly take any action to influence the legislative process (except through the established procedures of government), also leads to the conclusion that official personnel must not aid in the formation or development of farm organizations, no matter how desirable they may be.

Employees may, of course, participate in the organization of groups that are needed in carrying out Federally authorized programs—for example, an REA cooperative, a cooperative of FSA borrowers, and similar groups determined by the appropriate chief of bureau to be essential in effectuating Federally authorized programs. Even here, however, care must be exercised because the Department does not wish to see this type of specialized organization develop into a general farm organization. Certainly it is contrary to policy for local groups that participate in Federal-program effectuation to federate into State, regional, or national organizations.

The head of every bureau and office of the Department is requested to bring this memorandum to the attention of all its officers and employees, both in Washington and in the field. If any violations of any of the provisions of this memorandum should occur, full information with reference thereto should at once be submitted to the Director of Personnel by the head of the bureau in which the person violating any of these provisions is employed.

/s/CLAUDE B. WICKARD, *Secretary.*

Although the so-called farm adviser situation as it concerns us has been greatly modified in the last two or three years through the wise but never offensively aggressive steps taken by the veterinary societies, it is important to know that the attempt to organize farmers by officials paid at least in part by the federal government and wholly by taxpayers was a practice quite generally construed as evidence that our democracy was tolerating an undemocratic departure, that would sooner or later destroy itself.

CURRENT LITERATURE

ABSTRACTS

Tube Test vs. Whole Blood Test in Pullorum-Disease Work

Because the whole blood test has the advantage of being more economical than the tube test and the results are practically the same, the former is satisfactory in pullorum-disease control. In a total of 3,861 tests made, there was agreement in 92.41 per cent by both methods. The constancy of diagnosis from the first to the second tests was 98.79 per cent for the whole blood test and 87.07 per cent for the tube test. The constancy was greater by 2.72 per cent for the whole blood test. In another series, this percentage was reversed—2.5 per cent in favor of the tube test. In each group the whole blood test gave more positive reactors than the tube test. [*Gwatkin, R., and Moynihan, I. W. Comparison of the Whole Blood and Tube Agglutination Tests for Pullorum Disease. Scientific Agriculture, xxi (Feb. 1941), pp. 335-349.*]

The Veterinary Profession and War Economy

The author declares that eminent members of the veterinary profession in having magnified the needs of pet dogs and cats instead of "performing their true function, which is to increase the knowledge of animal management and preventive medicine and to train students in the basic principles of these subjects," have allowed agricultural scientists whose minds have not been thus diverted from their main task to replace the veterinary profession. The public looks to them instead of to veterinarians for aid and advice in these days of total war.

The stress of the war, the author emphasizes, has forced the veterinary profession to realize its true function, and he asserts that the veterinarian's future in Britain will depend upon the part he plays in winning the war.

It is not enough to aid in the current production of meat and milk. Preventing wastage of animals and animal products through knowledge of them is the veterinarian's task. The author writes that farmers are selling excellent horses to butchers for dog meat at higher prices than they could get for them as work horses. Unless the ministry of agriculture, after a study of all aspects of war economy, announces that the farm horse is not an efficient source of power, that practice should be prevented. Moreover, if horses in good condition must be slaughtered, their perfectly wholesome meat should be used for human consumption, since it has been officially stated that horse flesh is being used in various meat products.

Among the sorts of wastage mentioned are allowing the blood of slaughtered animals to flow into the drains, slaughtering young heifers and keeping emaciated cows too long after their usefulness has ended. Culling worthless animals, salvaging carcass products and foodstuffs and utilizing the manure wasted by knackers are among the measures named to overcome "the sinking of British ships twice as fast as they can be replaced" and the reprehensible wastage of home-produced foodstuffs and their by-products. Veterinarians are urged to exert their influence in these respects. [*Hussey, Ruth. The Profession and Our War Economy. The Veterinary Record, liii (June 28, 1941), p. 380.*]

Pastoral Hemoglobinuria of Cattle

Cattle grazing on certain ground in the province of Drenthe (Holland) suffer from hemoglobinuria during the whole summer, especially when grass growth is exuberant. The blood picture is characterized by the presence of many inclusion bodies in the red cells and by the production of intraglobular methemoglobin apparently caused by some toxic agent in the red cells, not in the plasma. Hemolytic influences not associated with inclusion bodies were excluded as the cause of the disease. [*Tynn, J. W. Research on Pasture Hemoglobinuria in Cattle (title translated). Tydsschrift voor Diergeneeskunde, lxvii (May 1, 1941), pp. 421-445.*]

C. H.

Crystal-Violet and Formalin Hog-Cholera Vaccines

A comparative study was made of immunizing hogs against cholera with formol vaccine and with the crystal-violet vaccine of McBryde and Cole. Of 37 hogs used, 12 were controls. Exposure was by contact with infected animals. Of the nine vaccinated with the serum-virus method all were fully immunized, whereas all given the formol vaccine came down with

cholera. Five of the hogs out of the 16 given crystal-violet vaccine showed illness in various degrees. The author, therefore, advised the use of serum-virus vaccination and discouraged the use of the formalin-treated vaccine. [*de Blieck, L. Immunization Against Hog Cholera with Formol Vaccine and Crystal Violet Vaccine (title translated). Tydsschrift voor Diergeneeskunde, lxvi (Oct. 1940), pp. 958-975.*]

C. H.

Mallein Test in the Dutch East Indies

The mallein test was administered to 6,741 horses with the following results: negative, 6,467; positive, 170; suspicious, 84; number of cases found *post mortem*, 213. The autopsies were negative in three of the positive reactors, in six of the suspicious reactors, and in one showing suspicious clinical symptoms.

In all, 223 horses were killed. One hundred and sixty-nine were positive reactors, 34 suspicious, 3 non-reactors because of suspicious clinical signs. The complement fixation test in 17 doubtful cases gave positive results.

The author asserts that while it would be difficult to eradicate glanders entirely in the district, the importance of repeated mallein tests on a large scale has been amply demonstrated. [*Soemarno, R. Mallein Test in the Dutch East Indies (title translated and abridged). Nederlandsche Bladen voor Diergeneeskunde, lii (Oct. 1940), pp. 259-269.*]

C. H.

The Health of New Yorkers

In April 1858, the state senate of New York appointed a committee to report on the extraordinary death rate in New York City, which at that time had a higher mortality than any other city in this country or Europe. Tenements were overcrowded, light deficient, ventilation bad, food and beverages unwholesome, streets, wharves and piers uncleaned, efficient sanitary policing nil, and the general disregard for sanitation was rampant. All of this was contained in the committee's report as of February 3, 1859. Of interest in veterinary medicine was the report that epizoötics of Texas fever decimated the cattle stock yards, milk was one fourth unclean tap water, influenza swept away thousands of horses, street-car horses were treated with miserable barbarity, underfed and worked 17 hours a day. It was apparently the first time in the United States that an effort was made to determine whether or not a large gathering of human beings could survive the environments it created.

The work of this committee brought about what the author calls "The Marriage of Medicine and Civil Government." The espousal gave birth to the Metropolitan Board of Health, which was to write many a brilliant page into the public health history of this country during the 75 years to follow and to give to our metropolis all of the blessings medicine can bestow upon a large urban population. [*Emerson, Haven. The Marriage of Medicine and Civil Government. Bulletin of the New York Academy of Medicine, n.s. xvii (July 1941), pp. 548-554.*].

The Dose of Phenothiazine in Horses

The author treated 44 horses: 18 brood mares from 4 to 15 years old, four of which were suckling their colts; 17 colts and fillies from 1 to 3 years old; seven working geldings; and two mature stallions. The weights varied from 1,200 lb. to 2,200 lb. All of these animals had been well fed, but only the working gelding had received regular exercise. The grain ration, but not hay, was withheld in the morning, and about noon each of them was given a feed of grain containing 60 Gm. of phenothiazine. Out of the 44 head, 38 ate the medicated feed readily. The other six ate the feed before evening.

Fecal examinations made biweekly for several months before treatment showed an average of 2,400 strongyle eggs per gram for each one of the horses. Two weeks after receiving the treatment, all but two of the mares showed the presence of eggs in their feces. Before treatment these two mares had egg counts of 7,100 to 7,600 per gram and two weeks after treatment the count was 100 eggs per gram. [*Britton, J. W. Phenothiazine Therapy in Draft Horses. The Cornell Veterinarian, xxxi (Jan. 1941), p. 85.*]

The Diagnosis of Influenza

Since the discovery of a virus in 1933, the problem of human influenza has been brought nearer to a solution. This virus is now designated influenza A, which, up to 1937, was generally believed to be *the* virus of influenza. But recent epidemics have not borne this out, since in some of them a second virus, influenza B, was isolated. The two are immunologically distinct, notwithstanding that they are clinically identical.

Recent studies appear to show that bac-

teria, rickettsiae and virus have been responsible for such infections. The clinical picture of these infections may resemble that of epidemic influenza. This is not surprising, since the diagnosis of influenza rests with a febrile disturbance having rather vague respiratory symptoms. The diagnosis is made from the epidemicity, rather than upon the study of the patients. It is questionable whether the sporadic case should be named influenza in the absence of proof. Better to use the old army term P. U. O. (= pyrexia of unknown origin). The situation is important, for even if persons are immunized for one influenza virus, there will still remain infections in the immunized groups which will be called "influenza." Some of these may be due to another influenza or to other agents. The common cold, which is now known to be distinct from influenza, may resemble the disease closely.

Recent discoveries* at the Rockefeller Institute show that we do possess an immunizing agent against influenza A. Whether similar antigens will be found that will protect against other causative agents is for the future to determine. There is not sufficient knowledge of the subject now to attempt the immunization of the general population. [*Editorial. The Present Status of Our Knowledge of Influenza Virus. Canadian Public Health Journal, xxxii (Feb. 1941), pp. 86-87.*]

*Influenza A and canine distemper viruses from ferrets.

BOOK NOTICES

The Boston Terrier

This new edition of the Judy press is divided into two approximately equal parts. One deals with the title and the other is Captain Will Judy's standardized generalities on dogology, pursuant to his policy of publishing uniform information on basic subjects applicable to all breeds.

One catches the spirit of this book in the blithe introduction glorifying this popular "screw tail" of the American home, a dog that is gay, bright, stylish and strictly of American origin—birthplace Boston, Mass.; birthday, February 1893, when the breed was recognized by the then adolescent AKC at the urge of breeders who had kept records and established pedigrees.

The story of the Boston Terrier, not being hidden in the dim legends of the distant past, is a lesson in "breeding out" unwanted traits of a domestic animal in a short period of time and developing a new being relatively free of the tormenting throwbacks of such undertakings. It was no idle task to create such a distinctly different being from the physical and psychic make-up of the Bulldog, Bull Terrier and French Bulldog, the progenitors of this delightful companion. [*The Boston Terrier. By Vincent J. Perry, licensed show judge. 160 pages, illustrated. Judy Publishing Company, Chicago, 1941. Price $2.00.*]

First Aid to Dogs and Cats

This handbook is an outgrowth of the National Air Raid Protection Committee of British veterinarians, written by one of them and coworkers of pet fancy. Following three complimentary forewords is an introductory chapter on the qualifications of a capable first-aider who is told forthwith that the text does not replace the services of the veterinarian. Useful gadgets in first aid are named and illustrated (hopples, collars, graspers, tape muzzles, etc.). Elementary "canine architecture" is described (bones, joints, muscles). Brief outlines of the anatomic apparatus (nervous, circulatory, digestive, respiratory) introduce the accidents liable to befall them and the first-aid treatment each should receive. The handling of wounds, burns, scalds, snake bites, foreign bodies, insect stings, poisons, guides the first-aider to avoid the use of harmful remedies and practices.

The chapter on war gases is up-to-the-minute information on that timely subject, and examples of wartime diets for dogs are lessons on substitution well worth a careful study. Three meatless combinations and one containing horse meat are prescribed, to what seems to be excellent advantage where meat is scarce. Formulas and methods of preparing these substitutes are as interesting as they will some day be historic.

The author does a good job of avoiding offensive trekking into the professional field, difficult as that is to accomplish in a treatise of this class. Owners of dogs and cats will appreciate this book as a present or for reading in the doctor's office. [*First Aid to the Dog and Cat. By Maurice Harvey Clarke, M.R.C.V.S. 140 pages, illustrated. Paper. The Williams & Wilkins Company, Baltimore, 1941. Price $1.00.*]

THE NEWS

AVMA Activities

Indianapolis Convention Notes

Total Registration.—1,946 (36 less than the all-time record of 1,982 set at the Washington [1940] session), distributed as follows:

Alabama	14	Missouri	74
Arizona	1	Montana	1
Arkansas	13	Nebraska	27
California	16	Nevada	0
Colorado	9	New Hampshire	4
Connecticut	7	New Jersey	30
Delaware	4	New Mexico	0
Dist. of Columbia	21	New York	53
Florida	22	North Carolina	13
Georgia	9	North Dakota	4
Idaho	0	Oregon	3
Illinois	212	Ohio	202
Indiana	485	Oklahoma	17
Iowa	95	Pennsylvania	46
Kansas	42	Rhode Island	6
Kentucky	42	South Carolina	18
Louisiana	18	South Dakota	4
Maine	4	Tennessee	31
Maryland	22	Texas	40
Massachusetts	22	Utah	1
Michigan	123	Vermont	15
Minnesota	37	Virginia	22
Mississippi	19	Washington	3
West Virginia	25	Canada	11
Wisconsin	47	Cuba	1
Wyoming	3	Dominican Repub.	1
Bahamas	2	Hawaii	1
Canal Zone	3	Puerto Rico	1

Annual Banquet.—1,209 attended—the largest veterinary banquet ever held.

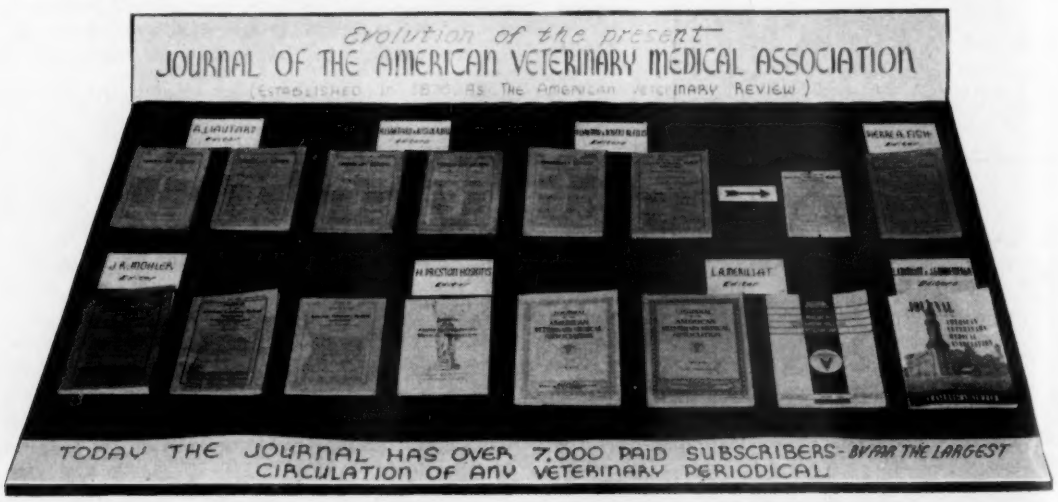
Alumni Luncheons.—1,157 attended—the highest figure on record for this event.

Exhibits.—37 companies occupied 44 booths—the largest number to date.

Proceedings.—The complete business proceedings will be published in the October issue, along with pictures taken at the clinics and at the golf tournament. Committee reports and reports of representatives will appear in the November issue. Papers presented before the various sections are scheduled for publication, as space permits, in issues beginning with December 1941.

Executive Board Elections

Following action taken at the Indianapolis meeting, the Executive Board has authorized elections to fill terms which expire in 1943 and 1942 in Districts II and IX, respectively. Nominating ballots were mailed on August 21


Evolution of the present
JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION
TODAY THE JOURNAL HAS OVER 7,000 PAID SUBSCRIBERS-BY FAR THE LARGEST CIRCULATION OF ANY VETERINARY PERIODICAL

This display was featured in the AVMA booth at the Indianapolis convention, portraying the evolution of the Association's official organ and the contributions of each editor to its development. An issue of the year 1890 appears at the upper left, the 1941 Convention Number at the lower right.

and 22 to members residing in these districts. The polls for nominations will close on October 21 for District II (Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania) and on October 22 for District IX (Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont).

NOTICE TO MEMBERS IN DISTRICT II

Through error, the nominating ballots for District II read, "To fill the unexpired term which ends with the close of the annual meeting in 1942." The date should have read, "1943."

Ken-L-Ration Awarded Seal of Approval

Ken-L-Ration, manufactured by Chappel Bros., Inc., of Rockford, Ill., was awarded the seal of approval of the AAHA-AVMA at a meeting of the Joint Committee on Foods of the two associations held in Indianapolis during the seventy-eighth annual meeting. Chappel Bros. thereby becomes a two-seal holder, its first seal having been granted to Ken-L-Biskit in July of this year.

APPLICATIONS

First Listing*

ANDREE, G. W.
Rensselaer, Ind.
D.V.M., Michigan State College, 1929.
Vouchers: John L. Kixmiller and D. D. Baker.

ASHMAN, ROBERT IRVING JR.
Room 245, Building 714, Naval Air Station, Jacksonville, Fla.
D.V.M., Cornell University, 1940.
Vouchers: Herbert L. Cox and C. P. Zepp.

BEAMER, PAUL D.
29 W. Frambes Ave., Columbus, Ohio.
D.V.M., Ohio State University, 1941.
Vouchers: J. Harold Knapp and W. F. Guard.

BLOOMQUIST, E. W.
Veterinary Station Hosp., Fort Lewis, Wash.
D.V.M., State College of Washington, 1939.
Vouchers: E. E. Wegner and S. C. Dildine.

BONHAM, P. O.
Mooresville, Ind.
D.V.M., Indiana Veterinary College, 1911.
Vouchers: J. L. Axby and F. A. Zimmer.

BOWNESS, E. RENDLE
Toronto Elevators Ltd., Queen's Quay, Toronto, Ont.
B.V.Sc., Ontario Veterinary College, 1932.
Vouchers: R. A. McIntosh and H. MacDonald.

BOYDSTON, J. L.
Wauseon, Ohio.
D.V.M., Michigan State College, 1937.
Vouchers: H. E. Ash and R. E. Rebrassier.

*See July 1941 issue, p. 74.

BROWN, HAROLD L.
Pawling, N. Y.
D.V.M., Cornell University, 1933.
Vouchers: Frederick W. Schutz and Roswell L. Brown.

BURT, A. C.
201 Kent St., Simcoe, Ont.
B.V.Sc., Ontario Veterinary College, 1911.
Vouchers: H. MacDonald and A. E. Cameron.

CAMPBELL, A. R.
Hensall, Ont.
B.V.Sc., Ontario Veterinary College, 1923.
Vouchers: Frank J. Cote and J. E. Johnson.

CAMPBELL, JOE S.
Route 4, Little Rock, Ark.
M.D.C., Chicago Veterinary College, 1911.
Vouchers: John H. Gillmann and F. O. Garrett, Jr.

CARNES, W. C.
South Washington St., Shelbyville, Ill.
D.V.M., McKillip Veterinary College, 1914.
Vouchers: L. A. Merillat and W. R. Spesard.

CASWELL, F. E.
North Adams, Mich.
B.V.Sc., Ontario Veterinary College, 1913.
Vouchers: E. C. W. Schubel and B. J. Killham.

CHALCRAFT, L. G.
Grayville, Ill.
D.V.M., Indiana Veterinary College, 1920.
Vouchers: W. B. Holmes and J. G. Hardenbergh.

CLEAVER, FRED E.
Avon, N. Y.
D.V.M., Cornell University, 1907.
Vouchers: R. R. Birch and Cassius Way.

COXON, W. B.
Zurich, Ont.
B.V.Sc., Ontario Veterinary College, 1935.
Vouchers: J. E. Johnson and Frank J. Cote.

DALEY, EDWARD H.
1710 Indiana Ave., La Porte, Ind.
M.D.V., McKillip Veterinary College, 1910.
Vouchers: J. C. Schoenlaub and I. S. McAdory.

DAVIS, H. J.
Aylmer West, Ont.
B.V.Sc., Ontario Veterinary College, 1914.
Vouchers: H. MacDonald and R. A. McIntosh.

DAWE, L. T.
Capac, Mich.
D.V.M., Michigan State College, 1938.
Vouchers: E. C. W. Schubel and E. S. White.

DEVEREUX, R. J.
154 Dalhousie St., Brantford, Ont.
B.V.Sc., Ontario Veterinary College, 1940.
Vouchers: H. MacDonald and A. E. Cameron.

DICKINSON, R. L.
P. O. Box 78, Elizabeth City, N. Car.
D.V.M., Alabama Polytechnic Institute, 1941.
Vouchers: E. S. Winters and J. E. Greene.

DICKSON, J. T.
Rockhill, S. Car.
D.V.M., Kansas City Veterinary College, 1916.
Vouchers: M. R. Blackstock and L. A. Merillat.

ENGLEBERG, LOUIS J.
6380 W. Colfax, Denver, Colo.
D.V.M., Colorado State College, 1940.
Vouchers: A. H. Francis and C. L. Davis.

FAHLUND, L. ALVIN
1524 Robinson Rd., Grand Rapids, Mich.
D.V.M., Michigan State College, 1941.
Vouchers: C. F. Clark and H. H. Ruhland.

FOSTER, GUY C.
351 W. Wiley St., Greenwood, Ind.
V.M.D., Indiana Veterinary College, 1909.
Vouchers: J. L. Kixmiller and Charles C. Dobson.

FRANCE, WALKER
Boonville, Ind.
D.V.M., Terre Haute Veterinary College, 1913.
Vouchers: L. A. Merillat and J. L. Axby.

GEORGE, J. L.
Chester, Neb.
D.V.M., Kansas State College, 1932.
Vouchers: A. C. Drach and G. E. Whipple.

GLUHM, FRANK N.
625 Prytania Ave., Hamilton, Ohio.
D.V.M., Ohio State University, 1941.
Vouchers: John W. Mills and J. C. Flynn.

GUTHRIE, JAMES E.
814 Edgehill Ave., Ashland, Ohio.
D.V.M., Ohio State University, 1938.
Vouchers: R. E. Rebrassier and H. E. Moskey.

HOCKER, M. R.
Alexandria, Ind.
D.V.M., Indiana Veterinary College, 1914.
Vouchers: J. C. Schoenlaub and J. L. Axby.

HOWARD, C. T.
Carlisle, Ind.
V.M.D., Indiana Veterinary College, 1907.
Vouchers: J. L. Axby and W. A. Sullivan.

JONES, W. E.
Leesburg, Ohio.
D.V.M., Cincinnati Veterinary College, 1915.
Vouchers: R. E. Rebrassier and L. A. Merillat.

KARCHER, JIM N.
516 University Ave. S.E., Minneapolis, Minn.
D.V.M., Ohio State University, 1940.
Vouchers: Donald B. Palmer and Carl J. Norden.

KEITH, GEORGE E.
Plymouth, Ind.
D.V.M., Indiana Veterinary College, 1918.
Vouchers: Walter K. York and J. L. Axby.

KELLY, STEPHEN R.
19233 Couyens Hwy., Detroit, Mich.
D.V.M., Michigan State College, 1941.
Vouchers: C. F. Clark and B. J. Killham.

KETTLER, H. H.
Milford Center, Ohio.
D.V.M., Ohio State University, 1916.
Vouchers: N. D. Backus and F. A. Zimmer.

KNOTT, G. K. L.
616 Mission Blvd., West Riverside, Calif.
Royal Veterinary College, London, England, 1935.
Vouchers: Wm. J. McAllister and H. Sidney Cantwell.

LINN, ADOLPH L.
1234 Pacific St., Brooklyn, N. Y.
D.V.M., Texas A & M College, 1941.
Vouchers: H. Schmidt and R. D. Turk.

LONG, L. E.
Grenada, Miss.
D.V.M., Chicago Veterinary College, 1920.
Vouchers: M. J. Luster and Wm. L. Gates.

LUKENS, WILLIAM L.
Veterinary Station Hosp., Fort Knox, Ky.
D.V.M., Ohio State University, 1938.
Vouchers: Seth C. Dildine and Robert W. Cook.

MACKAY, J. G.
183 Eglinton Ave. W., Toronto, Ont.
B.V.Sc., Ontario Veterinary College, 1938.
Vouchers: H. MacDonald and A. E. Cameron.

MACLEOD, A. H.
Schomberg, Ont.
B.V.Sc., Ontario Veterinary College, 1916.
Vouchers: W. Moynihan and H. MacDonald.

MARLOWE, HILDING M.
2415 S. Broad St., San Luis Obispo, Calif.
D.V.M., State College of Washington, 1937.
Vouchers: M. R. Hales and Richard H. Jurden.

MARQUARDT, S. J.
Route No. 1, Monroeville, Ind.
D.V.M., Ohio State University, 1904.
Vouchers: J. C. Flynn and C. C. Donelson.

MARTIN, JAMES R.
Romney, Ind.
D.V.M., Indiana Veterinary College, 1915.
Vouchers: J. C. Schoenlaub and L. A. Merillat.

MASKER, A. A.
Battle Ground, Ind.
D.V.M., Terre Haute Veterinary College, 1913.
Vouchers: R. C. Julien and J. L. Axby.

MELMAN, HAROLD
1220 Holbrook Terrace N.E., Washington, D. C.
D.V.M., Texas A & M College, 1941.
Vouchers: H. Schmidt and H. L. Van Volkenberg.

MICHAEL, WM. R.
Highland, Ill.
M.D.C., Chicago Veterinary College, 1901.
Vouchers: A. E. Bott and J. P. Torrey.

MILLER, RALEIGH A.
414 S. 5th St., Richmond, Ind.
D.V.M., Indiana Veterinary College, 1917.
Vouchers: Chas. W. Fisher and C. H. Gates.

MUMFORD, J. E.
62 Gothic Ave., Toronto, Ont.
B.V.Sc., Ontario Veterinary College, 1915.
Vouchers: G. A. Rose and H. MacDonald.

MURRAY, J. G.
Ingersoll, Ont.
V.S., Ontario Veterinary College, 1908.
Vouchers: J. E. Johnson and Frank J. Cote.

OLDHAM, G. R.
R.R. 3, Kokomo, Ind.
D.V.M., Ohio State University, 1938.
Vouchers: T. L. Steenerson and W. K. York.

O'NEILL, JOHN L.
114 W. Merry Ave., Bowling Green, Ohio.
D.VM., Ohio State University, 1936.
Vouchers: H. E. Ash and R. E. Rebrassier.

PEARCE, GRACE
X-Ray and Laboratory, State Hospital, Richmond, Ind.
D.V.M., McKillip Veterinary College, 1916.
Vouchers: J. L. Axby and L. A. Merillat.

PICKETT, DEETS
40 S. 7th St., Kansas City, Kan.
D.V.M., Kansas State College, 1933.
Vouchers: Jas. D. Grossman and Edwin J. Frick.

PINKNEY, R. J.
Cooksville, Ont.
B.V.Sc., Ontario Veterinary College, 1937.
Vouchers: H. MacDonald and R. A. McIntosh.

PLACE, CHARLES B.
50 Horne St., Dover, N. H.
D.V.M., Grand Rapids Veterinary College, 1918.
Vouchers: H. W. Jakeman and R. W. Smith.

PORTEUS, ROBERT
512 Park Rd., Bellefontaine, Ohio.
D.V.M., Ohio State University, 1910.
Vouchers: Leo Anderson and Jas. D. Grossman.

RASMUSSEN, WARREN E.
4020 Harrison Blvd., Ogden, Utah.
D.V.M., Colorado State College, 1928.
Vouchers: E. D. Leiby and H. H. Cohenour.

REDMON, J. T.
1422 N. Capitol Ave., Indianapolis, Ind.
V.M.D., Indiana Veterinary College, 1909.
Vouchers: J. C. Schoenlaub and J. L. Axby.

RICE, R. B.
418 E. North St., Kenton, Ohio.
D.V.M., Ohio State University, 1915.
Vouchers: A. G. Madden, Jr. and C. L. Haupert.

RIEGEL, R. C.
201 N. Mill St., Harrisburg, Ill.
D.V.M., Grand Rapids Veterinary College, 1915.
Vouchers: C. C. Hastings and J. E. Tinder.

ROSS, JOHN W.
530 Randolph Court, Meadville, Pa.
D.V.M., Ohio State University, 1936.
Vouchers: J. W. Mills and Earle S. Pickup.

ROUTON, R. G.
Camby, Ind.
D.V.M., Indiana Veterinary College, 1922.
Vouchers: J. C. Schoenlaub and Walter York.

RUMNEY, JEAN M.
61 King St. W., Hamilton, Ont.
B.V.Sc., Ontario Veterinary College, 1939.
Vouchers: L. M. Heath and C. W. McIntosh.

SANDERS, C. C.
2134 Broadway, Indianapolis, Ind.
D.V.M., Indiana Veterinary College, 1916.
Vouchers: F. J. Muecke and J. C. Flynn.

SCRUGGS, J. H.
700 S. Crockett, Sherman, Texas.
D.V.M., Texas A & M College, 1936.
Vouchers: John H. Milliff and Charles E. Fanslau.

SMITH, H. W.
Napanee, Ont.
B.V.Sc., Ontario Veterinary College, 1912.
Vouchers: H. MacDonald and R. A. McIntosh.

SNYDER, J. R.
State Capitol, Lincoln, Neb.
D.V.M., Saint Joseph Veterinary College, 1918.
Vouchers: Frank Breed and A. H. Quin.

STEINER, E. S.
Exeter, Ont.
B.V.Sc., Ontario Veterinary College, 1917.
Vouchers: J. E. Johnson and Frank J. Cote.

STEVENSON, W. G.
c/o Ayerst, McKenna & Harrison, Ltd., Room 506 McGill Bldg., Montreal, Que.
B.V.Sc., Ontario Veterinary College, 1937.
Vouchers: Frank W. Schofield and H. MacDonald.

STROUS, RALPH H.
Wolcott, Ind.
D.V.M., Indiana Veterinary College, 1921.
Vouchers: John L. Kixmiller and D. D. Baker.

TENNENT, D. C.
348 Beresford Ave., Toronto, Ont.
V.S., Ontario Veterinary College, 1905.
Vouchers: A. E. Cameron and H. MacDonald.

THEISS, EUGENE W.
116 E. Maple, Independence, Mo.
D.V.M., Kansas State College, 1930.
Vouchers: J. C. Flynn and Jas. D. Grossman.

TIMMS, WALTER H.
Avon, Ill.
D.V.M., Iowa State College, 1941.
Vouchers: D. M. Smith and J. W. Lucas.

TREAT, E. K.
Manchester Center, Vt.
D.V.M., Ohio State University, 1933.
Vouchers: J. C. Flynn and E. W. Robinson.

WADDELL, WILLIAM F.
1153 Alto Ave., S.E., Grand Rapids, Mich.
D.V.M., Kansas State College, 1935.
Vouchers: R. R. Dykstra and C. H. Hays.

WALCHER, J. L.
322 S. Spruce St., Nokomis, Ill.
M.D.C., Chicago Veterinary College, 1909.
Vouchers: B. L. Lake and A. E. Bott.

WHITE, C. B.
Stanford, Ill.
D.V.M., McKillip Veterinary College, 1914.
Vouchers: John S. Koen and L. A. Merillat.

WILSON, C. P.
Lock Box 113, Lawrence, Ind.
V.S., Indiana Veterinary College, 1895.
Vouchers: T. A. Sigler and J. C. Flynn.

WOLF, CHAS. F.
1017 Washtenaw, Ypsilanti, Mich.
D.V.M., Chicago Veterinary College, 1912.
Vouchers: E. C. W. Schubel and J. C. Schwabland.

Second Listing

Adams, Garland B., Box 929, Vernon, Texas.
Allen, Clifford A., 1595 Forrest Ave., Memphis, Tenn.
Amerine, Ivan E., Rt. No. 1, Canal Winchester, Ohio.
Appleby, Aaron, P. O. Box 46, Blacksburg, Va.
Ascher, Margaret, 310 W. 79th St., New York, N. Y.
Babe, Carl R., R. F. D. 1, Twin Oaks, Pa.
Baily, William H., 105 E. Sickle St., Kennett Square, Pa.
Barlow, Ruth M., 823 Main St., Amherst, Mass.
Barry, Arthur A., 45 Campbell Ave., Revere, Mass.
Baumgarten, Arthur M., 88 Belmont Ave., Paterson, N. J.
Beatty, Millard S., Barren Rd., Lima, Pa.
Belding, Sherl A., Elkton, Mich.
Bernkrant, Alfred I., 2000 Cravitt St., Bryan, Texas.
Bernkrant, Louis, 2000 Cravitt St., Bryan, Texas.
Berthold, N. R., 1379 Mathews Ave., Lakewood, Ohio.
Blake, Robt., R.R. No. 2, Anderson, Ind.
Bogen, Sidney, 1507 Charlotte St., Bronx, N. Y.
Bond, William P., Brockway, Pa.
Borer, Maurice H., 1439 President St., Brooklyn, N. Y.
Boyd, Wayne W., Rt. No. 3, Elyria, Ohio.
Boyens, R. W., 6600 Normal Blvd., Chicago, Ill.
Brown, A. F., 415 Graham Ave., Eau Claire, Wis.
Brown, Thomas W., Fawn Grove, Pa.
Burkhart, Robert, 198 Walnut St., Nutley, N. J.
Burrell, John V., 10608 Carnegie Ave., Cleveland, Ohio.
Burrus, Marvin M., Route 1, Byers, Texas.
Candlin, Paul Townley, c/o Grant Ranch, Littleton, Colo.
Carpenter, P. Robert, R. D. No. 1, Kent, Ohio.
Carrico, J. E., Bicknell, Ind.
Carter, Richard W., 134 N. 35th St., Omaha, Neb.
Carver, H. E., 108 E. Main St., Higginsville, Mo.
Castro, Fred, 443 Baden Ave., South San Francisco, Calif.
Chambers, John W., Jr., Garland, Utah.
Chambers, Walter M., New Lyme, Ohio.
Christian, T. T., P. O. Box 1253, Waco, Texas.
Churchill, Edwin A., 39th & Woodland Ave., Philadelphia, Pa.
Collier, John Raymond, 224 Ash St., Marysville, Ohio.
Collins, Elizabeth J., Short Hills, N. J.
Cook, J. A., North Manchester, Ind.
Cooper, Stanley R., 2379 Loyola Rd., University Heights, Ohio.
Cromey, Wm. H., Wanatah, Ind.
Cummings, Frank A., LaGrange, Ind.
Davis, Richard H., Jr., College Station, Texas.
Dinsmore, Jack R., 515 N. Collett, Lima, Ohio.
Dionne, Bertrand B., 1 Gilman Ave., Brunswick, Maine.
Douglass, Frank W., 1001 N. Santa Fe., Salina, Kan.
Dunlap, Floyd P., 454 N. Court St., Circleville, Ohio.
Dunn, R. E., 1806—5th Ave. N., Great Falls, Mont.
Eads, F. Eugene, 604 S. Broadway, Urbana, Ill.
Edwards, Myles J., 419 Main St., Norwich, Conn.
Einhorn, Ralph W., Box 1164, College Station, Texas.
Ellmers, Gordon R., 45 Cane St., Bogota, N. J.
Ely, John B., South St., Oxford, Pa.
Fallis, James R., Milan, Ind.
Faust, H. Reed, Box 3, Comfort, Texas.
Fireoved, D. W., Angola, Ind.
Fouse, Gerald H., Wilmington Rd. at Hillcrest, Newcastle, Pa.
Franklin, Ted E., 400 Kentucky, Amarillo, Texas.
Franz, G. A., 505 Federal Bldg., Indianapolis, Ind.
Fry, E. W., Hope, Ind.
Gaffin, Art H., 309 E. Washington St., Clinton, Ill.
Gardner, Paul O., 1579 S. 3rd St., Columbus, Ohio.
Gates, Glenn D., Clarksdale, Miss.
Glucksman, Norman J., 843 S. 19th St., Newark, N. J.
Gray, Hollis A., 1616 Columbus Ave., Sandusky, Ohio.
Grim, Burnell H., Hampton, Pa.
Gutknecht, A. J., 1329 Cole St., San Francisco, Calif.
Gutridge, Fred D., Granville, Ohio.
Habel, Robert E., 1648 Cone St., Toledo, Ohio.
Hage, T. J., R. R. 3, Monroe, Mich.
Hammerberg, C. E., New London, Wis.
Headley, Ralph E., Reynoldsburg, Ohio.
Hedeman, Lincoln P., 471 W. Market St., Akron, Ohio.
Heinrich, Cyril L., 1440 Shuler Ave., Hamilton, Ohio.
Hempy, Jack H., Groveport, Ohio.
Herring, Raymond L., R.F.D. 1, Oak Harbor, Ohio.
Hilsheimer, Wilbert G., Rt. No. 7, Chillicothe, Ohio.
Hinchman, Lowell W., Glenwood, Ind.
Hupp, Lynn D., Wayland, Mich.
Jaquette, Daniel Stratton, 605 Elm Ave., Swarthmore, Pa.
Jaynes, Otis G., Lewisville, Ind.

Jones, Lowell M., Rushylvania, Ohio.
Jordan, Justin E., 304 W. 12th St., Peru, Ind.
Kendall, Donald A., 1728 Union Blvd. S. E., Grand Rapids, Mich.
Kirkham, Wayne W., Elizabeth, Ind.
Klein, Ben, R.D. No. 3, Geneva, Ohio.
Kline, Dale S., Thorntown, Ind.
Knappenberger, Robert E., c/o Towson Veterinary Hosp., Towson, Md.
Kottenbrock, Amos F., Kalida, Ohio.
Labold, Jack J., Brownsville, Tenn.
Lair, John R., Connersville, Ind.
Larson, Kenneth E., Evansville, Minn.
Larson, Walter W., 34 Lyons St., New Britain, Conn.
Latier, Robert E., 707 Kenilworth Ave., Coshocton, Ohio.
Lee, John M., 6935 Paschall Ave., Philadelphia, Pa.
Lee, Willard L., Iola, Wis.
Leed, Robert H., 131—6th St., North Canton, Ohio.
Leighton, Robert L., Angell Memorial Hosp., Longwood Ave., Boston, Mass.
Lerch, Robert J., c/o Dr. L. R. Haubrich, Box 8, Claremont, N. H.
Levy, George, 214 Echo Place, New York, N. Y.
Long, W. M., 15 Jones St., Burlington, N. Car.
Lusk, David E., 4628 Topper Ave., Ashtabula, Ohio.
Lustig, Seymour, 449 Clinton Ave., Newark, N. J.
McKinnon, Robert, Jr., Hiawatha, Utah.
MacEachern, Gordon, 15 Groveland St., Haverhill, Mass.
MacKenzie, Eugene R., R.F.D. 4, Concord. N. H.
Maloney, R. J., 893 Market St., Meadville, Pa.
Mark, Irwin C., Bay City, Texas.
Martin, Kenneth H., 251 Main St., Randolph, N. Y.
May, Wallace G., Route 1, Hart, Mich.
Melton, George A., Atmore, Ala.
Mencimer, F. R., 4100 Riverdale Rd., Ogden, Utah.
Menges, Robert W., 12806 Maplerow Ave., Cleveland, Ohio.
Metzger, Philip P., R.F.D. 2, Columbia, Pa.
Mullen, Francis E., 7 South St., Newmarket, N. H.
Nathan, William R., Box 3001, College Station, Texas.
Nichols, Jeptha H., 458 E. Crawford St., Paris, Ill.
Noble, Glen Lewis, North Fayette St., Fayette, Ohio.
O'Connor, James T., Jr., 311 N. Henry St., Richmond, Va.
Parker, Hankins, 332 Evergreen St., Brewton, Ala.
Pessin, Simon M., 1042 Sherman Ave., New York, N. Y.
Petty, W. V., Dawson, Ga.
Phillips, John Quaill, 542 Teece Ave., Bellevue, Pa.
Pollock, Samuel, 254 Ward Pl., South Orange, N. J.
Porter, W. Norris, Granbury, Texas.
Price, Lawrence W., Liberty Center, Ohio.
Price, Roy B., Seaton, Ill.
Rachlin, Herbert S., 5244 N. 15th St., Philadelphia, Pa.
Rasi, Laddie Bert, Rt. No. 2, Hudson, Ohio.
Rehkemper, Jack A., 4128 Stanhope, Dallas, Texas.
Richards, Jacob P., 4948 Monroe St., Toledo, Ohio.
Roberts, Irving M., 190 Keer Ave., Newark, N. J.
Romo, Ralph R., 444 E. Orange Ave., Pico, Calif.
Ross, Charles P., Rt. No. 3, Greenville, Ohio.
Rothman, Irwin, 1827 W. Diamond St., Philadelphia, Pa.
Savage, William C. G., 5047 Spruce St., Philadelphia, Pa.
Schaub, John Allan, Rt. 1, Yore Ave., Benton Harbor, Mich.
Schnautz, John O., 39th & Woodland Ave., Philadelphia, Pa.
Sherber, Murray Herbert, 411 Abbott Apartments (P. O. Box 57), East Lansing, Mich.
Showalter, C. L., R.F.D. 5, Lexington, Va.
Showalter, Russell A., Box 122, Cumberland, Ind.
Shrader, John K., New Stanton, Pa.
Siegle, Harrison B., 439 Washington St., Brookline, Mass.
Simione, J. R., 774 Fairgreen Ave., Youngstown, Ohio.
Sims, Jacob B., Pleasantville, Ohio.
Sluss, Robert E., 215 W. Gorgas St., Louisville, Ohio.
Speck, Roy Emmit, 1004 W. 2nd St., Anderson, Ind.
Spencer, A. J., 240 Cowley Ave., East Lansing, Mich.
Sprinkle, David G., Box 733, Wilmington, N. Car.
Stallworth, G. Driskill, Valdina Farms, Inc., Utopia, Texas.
Stauffer, Douglas R., 423 Jump St., Bucyrus, Ohio.
Steele, James H., Animal Pathology Dept., Michigan State College, East Lansing, Mich.
Stevens, Hugh W., Lewiston, Utah.
Stewart, Marvin C., Wren, Ohio.
Story, F. A., Box 112, Shelby, N. Car.
Stout, C. F., 1430 N. Capitol Ave., Indianapolis, Ind.
Strohl, B. L., 326 Sutherland Ave., Paris, Ill.
Swail, Clark E., Jr., Colebrook, N. H.
Swart, P. Bruce, 1226 Edgewood N. E., Warren, Ohio.
Terrill, Lloyd H., R.R. No. 1, Ridgeway, Ohio.
Thurber, W. B., 301 Seventh Ave. S. W., Rochester, Minn.

Toro, Enrique, Jr., 30 Salud St., Ponce, Puerto Rico.

Tugaw, Edward A., 1000 N. Kimball Ave., Caldwell, Idaho.

Twohig, James D., Veterinary Station Hosp., Fort Lewis, Wash.

Van Tilborg, E. J., 1717 Lay Blvd., Kalamazoo, Mich.

Wagaman, Paul Henry, 210 S. Washington, Kokomo, Ind.,

Walker, J. Woodrow, Box 280, Gainesville, Texas.

Walker, John W., Clinton, N. J.

Wallace, Paul H., Fort Branch, Ind.

Ward, J. A., 1050 Forest Ave., Staten Island, N. Y.

Weinland, Kenneth M., 1143 Packard Ave., Fort Wayne, Ind.

Welch, James L., 314 Beaver Dam St., Waupun, Wis.

Weldy, Maurice Levon, Wakarusa, Ind.

Wiley, James R., 90 East Ave., Wellsboro, Pa.

Willard, A. S., Edinburg, Ind.

Wolfe, Gerald, 124 S. Washington Ave., Columbus, Ohio.

Wolfe, Larry J., R.F.D. 5, Crafton, Pa.

Wright, Charles C., 1820 Montana St., Apt. No. 5, El Paso, Texas.

Zahn, Charles W., 4718 Reiger Ave., Dallas, Texas.

U. S. GOVERNMENT

Army Veterinary Service

Regular Army.—Lt. Colonel Irby R. Pollard is relieved from assignment and duty at the south central remount area, San Angelo, Texas, effective on or about August 1, 1941, and assigned to the eighth corps area service command, Fort Bliss, Texas, for duty.

So much of special orders as assigns Lt. Colonel Kenneth E. Buffin to Fort Mason, Calif., upon his return from foreign service is amended so as to assign him to duty at Fort Belvoir, Va.

Lt. Colonel Burlin C. Bridges is relieved from assignment and duty at the Front Royal quartermaster depot, Front Royal, Va., effective on or about September 1, 1941, and assigned to the east central remount area, Lexington, Ky., for duty.

Lt. Colonel William R. Wolfe is relieved from assignment and duty at Fort Oglethorpe, Ga., effective on or about September 1, 1941, and assigned to the Front Royal quartermaster depot, Front Royal, Va., for duty.

Lt. Colonel Frank H. Woodruff is relieved from assignment and duty at Fort Sill, Okla., effective on or about September 1, 1941, and assigned to Fort Oglethorpe, Ga., for duty.

Veterinary Corps Reserve.—Captain George W. Gillie, Veterinary Corps Reserve, now at Washington, D. C., is ordered to 28-day active duty effective July 5, 1941, and assigned to the first cavalry division, Fort Bliss, Texas, for training. He will be relieved in time to enable him to arrive at his home, Fort Wayne, Ind., on August 1, 1941, on which date he will revert to inactive service.

Captain Arthur R. Thiele is relieved from assignment and duty at Fort Wadsworth, N. Y., effective on or about August 15, 1941, and assigned to the Jersey City quartermaster depot, Jersey City, N. J., for duty.

First Lieut. Tyler J. Young is relieved from assignment and duty at the Army Medical Center, Washington, D. C., effective on or about August 10, 1941, and assigned to the fourth corps area laboratory, Fort McPherson, Ga., for duty.

Major Lewis H. Moe, Stillwater, Okla., is ordered to active duty, effective July 28, 1941, and assigned to the San Antonio general depot, Fort Sam Houston, Texas.

First Lieut. Jacob H. Ricker is relieved from assignment and duty at Fort Wadsworth, N. Y., effective on or about August 20, 1941, and assigned to the Jersey City quartermaster depot, Jersey City, N. J., for duty.

Announcement is made of the promotion of the following veterinary reserve officers (all first lieutenants), now on active duty, to the grade of captain:

Joseph J. Merenda, May 7, 1941.
Henry R. Schrumpf, July 3, 1941.
Howard E. McCutchan, July 11, 1941.
Manuel C. Kastner, July 29, 1941.

The following officers of the Veterinary Corps Reserve, now on extended active duty at the stations indicated, have been ordered to report to the commanding officer, Chicago quartermaster depot, Chicago, Ill., for temporary duty for a period of 30 days for the purpose of pursuing a course of instruction, commencing on July 17, 1941, in the inspection of meat, meat-food and dairy products, under the depot veterinarian. Upon completion of this duty each of the officers (first lieutenants unless otherwise indicated) will return to his proper station:

Donald V. Hughes, Manchester Air Base, Manchester, N. H.
Howard C. Poulin, Fort Adams, R. I.
Lucien P. Bailey, Camp Lee, Va.
Ross T. Mickle, Fort Myer, Va.
Robert Tolley, Fort Monroe, Va.
Captain Elmer F. Finke, Camp Forrest, Tenn.
Captain Ashley J. Joyner, Camp Stewart, Ga.
Eldred W. Exley, Camp Wheeler, Ga.
Ralph H. Wadsworth, Fort Knox, Ky.
Willard M. Strawn, Fort Knox, Ky.

William L. Lukens, Fort Knox, Ky.

Norman H. Stoner, Selfridge Field, Mich.

James P. Crawford, Savanna Ord. Depot, Proving Ground, Ill.

Alpheus H. Seeley, Randolph Field, Texas.

Merle L. Farris, 69th Quartermaster Co. (Refrig.) Camp Claiborne, La.

Major Hans J. Magens, Division Veterinarian, 2nd Div., Fort Sam Houston, Texas.

C. B. Randall, 68th QM Co. (Refrig.) Camp Livingston, La.

Herbert P. Bolks, Boise Air Base, Boise, Idaho.

James A. Eskeldson, Fresno Air Base, Fresno, Calif.

Joseph H. Berger, Sunset Field, Calif.

Theodore M. Barr, Fort Sheridan, Ill.

National Guard.—Announcement is made of the temporary promotion in the Army of the United States of First Lieut. Allen S. VanSant to the grade of captain to date from July 1, 1941.

Civil Service Commission Bans Written Test for BAI Applicants

National defense activities along with a general increasing need for veterinarians in government work has led to the inauguration of a new procedure for admitting veterinarians to junior positions in the Bureau of Animal Industry, a Civil Service dispatch dated July 31 announces.

The new plan is described as "open continuous" and "unassembled"—that is, applications will be rated as soon as is practicable after receipt and a written test will not be given.

Persons who meet the Commission's requirements, which are described in detail in the application form (obtainable at any first- or second-class post office or from the Commission in Washington, D. C.), will be appointed junior veterinarians in the Bureau, at a salary of $2,000 a year. Among the duties of this position are inspection of food animals, food products and packing plants, and disease-control work.

Completion of a full course in veterinary medicine is required. Applications from senior students will be accepted, although they can not enter service until their course is completed. The age limit is 45, unless the applicant is entitled to preference on account of military service.

Bureau of Animal Industry veterinarians expect favorable action on a bill before Congress (H.R. 1073) to advance their salaries. It provides for graded increments based upon duration and includes all employés compensated on a per annum basis.

AMONG THE STATES

Arkansas

State Association.—The new officers of the state association are Amos Musgrave of Hatfield, president; W. T. Fuqua of North Little Rock, secretary. A new departure in society work was the ten-day clinic held from June 16 to 27 at Little Rock, where a score or more participated in a series of afternoon meetings. The last day, Friday, June 27, was spent in a general review of the whole curriculum.

California

Recent discoveries have shown for the first time that equine infectious anemia exists in the state.

• • •

Numerous newspapers throughout the state are telling veterinarians to war against swine diseases. They call hog cholera "Public Enemy No. 1" and advise vaccination when pigs are young. The guidance of the American Foundation of Animal Health is widely quoted.

• • •

An illustrated article in the *San Diego Tribune-Sun* of June 28 shows State Veterinarian C. U. Duckworth and Technician (Mrs.) Ethyl Quinlan "running down" dourine at the laboratory of the San Diego zoo. Out of 2,000 blood samples examined 14 were pronounced positive. The dourine situation, says the report, is complicated by the importation of Mexican horses that have not been tested.

Florida

The Jacksonville mounted patrol, composed of 80 patriotic business men not subject to call in the nation's regular armed forces, was formally presented to the Duval County-Jacksonville Defense Council a short time ago for use in any local emergency during the national emergency.

As far as is known, the troop is the first of its kind in the United States. It is considered adaptable to various types of services as a unit of the county and city law-enforcement bodies. The horsemen, who supply their own mounts, are khaki-clad and wear campaign hats; all of them are volunteers and they drill regularly. The unit was organized two months ago. M. W. EMMEL, *Resident Sec'y.*

Illinois

Rabies is reported to be unusually prevalent in the southern part of Chicago and in suburbs and towns to the south and southwest of that city. LaGrange, Brookfield, Morris, Gardner and Mazon are particularly mentioned in press reports.

Indiana

The timely subject "War Horses and Glanders" was discussed at length at the June meeting of the Northwest Indiana Veterinary Medical Association at Winamac by E. J. Yocom, host of the session. An illustrated talk on surgery was given by G. W. Bardens of Lowell.

• • •

The FSA in connection with the county agents of Harrison, Washington, Floyd and Clark counties has planned to finance an artificial breeding association. The employment of a veterinarian and the purchase or lease of suitable bulls were among the steps recommended.

• • •

The importance of the "Food for Defense Program" instituted by the office of production management at Washington, D. C., was emphasized by L. P. Doyle, veterinary scientist of Purdue University, according to press dispatches published throughout the state. The control of hog cholera, swine dysentery and brucellosis by a wisely directed veterinary service was stressed. G. E. Botkin, secretary of the state association, and State Veterinarian Axby also are mentioned as participating in this significant preparedness activity. The production of farm animals in abundance is the timely slogan throughout the state's veterinary service. Speeding up bovine and swine brucellosis control is particularly urged.

Iowa

B. F. Ward, Sr., pioneer practitioner of Glenwood, is the father of two veterinarians and the grandfather of another veterinarian and the brother of still another who is deceased. To this add two grandchildren taking the veterinary course at Iowa State College. Dr. Ward is a native of Troy, N. Y.

• • •

Southeastern Association.—The southeastern association dinner meeting held at Mt. Pleasant on July 1 was attended by 24 members. R. M. Hofferd of Cedar Rapids spoke against the importation of South American cattle products owing to the danger of bringing in foot-and-mouth disease, and the association passed resolutions supporting that contention. To the technical reason given the report added that importations of frozen beef from South America would supplant a million United States cattle per year.

U. S. Inspector L. A. Fraser gave instructions on collecting blood samples in brucellosis work and L. A. Dykstra, in leading the discussion, mentioned the relation of bovine brucellosis to fistulous withers and poll evil in horses. Balanced rations for farm animals, illustrated with charts, was discussed by Mr. C. A. Rhoadstrum of Peoria. R. K. Benn spoke on Bang's disease work in Arkansas. Other speakers were J. H. Kritchel, H. A. Johnston, President C. M. Collins, C. E. Hunt, and H. E. Tyner.

Kentucky

State Association.—State Veterinarian L. L. Breeck was the main speaker at the meeting held in Louisville, July 10. Statewide work on bovine brucellosis and inspections to prevent the state from becoming the dumping ground for infected cattle were the main subjects discussed. The incidence of reactors to the agglutination test for Bang's disease among imported cattle has been found to run about 13 per cent.

The officers elected were William Coffee of La Center, president; A. B. Plummer of Millersburg and R. E. Cropper of Winchester, vice presidents; and F. H. Reister of Buechel, secretary-treasurer.

Maine

H. M. Tucker Honored.—H. M. Tucker, retired chief of the state division of animal industry, was honored on July 9 by the largest assembly of veterinarians in the history of the state association. Seventy-five Maine veterinarians, their wives and friends met at the Overlook Farm, near Casco, in recognition of his 24 years of service as chief of that division.

Mr. Tucker entered the employ of the state department of agriculture in March 1917. He assumed the duties of chief of the division of animal industry in 1921 when the livestock sanitary commission was abolished and later the establishment and supervision of the state egg laying contest was incorporated in his work. In 1931, when an act was passed to provide compensation for poultry killed by dogs and predatory animals, and in 1933, when the poultry license law was enacted, new duties were added to his office. In 1921, the principal objective was the eradication of bovine tuberculosis. In about eight years Maine (1929) became the second state to be classed as a modified accredited area. This achievement placed the state's livestock in high demand by other states in the Northeast. This work brought Mr. Tucker one personal assault and three court cases which were decided in favor of the state's program. Then came the control of Bang's disease, now being carried out on an increasingly extensive scale by Mr. D. P. Corbett.

"Upon taking over the livestock sanitary work," Mr. Tucker said, "I felt that I would be unfortunate without the support and coöperation of veterinarians. When this association elected me an honorary member, I considered

it one of the greatest honors that has ever come my way."

M. E. Maddocks of Augusta and S. W. Stiles of Falmouth Foreside spoke of Mr. Tucker's services to agriculture and the veterinary profession.

The veterinarians and their families, his former secretarial force, and the Maine egg laying contest officials presented Mr. Tucker with a traveling bag as a token of appreciation for his services.

Following the banquet the ladies enjoyed a social evening and the members held a business meeting.

E. E. Libby gave a favorable talk on the progress of area testing to control Bang's disease in Piscataquis county, indicating that the dairymen are coöperative.

The feature of the meeting was an address by H. W. Jakeman of Boston, Mass., president-elect of the American Veterinary Medical association. He complimented the Maine association on its new practice act requiring all applicants for a license to practice to be graduates of approved veterinary colleges. He spoke on the use of sulfanilamide and related products, on the study of viruses and virus vaccines and on the control by proper diet of certain diseases previously thought to be infectious.

Dr. Jakeman was unanimously voted an honorary member.

S. W. Stiles of Falmouth Foreside presided. Mrs. S. W. Stiles and Mrs. G. M. Potter arranged the social events for the ladies.

J. F. WITTER, *Secretary.*

Maryland

The Baltimore Association.—The Baltimore Veterinary Medical Association, founded by public spirited veterinarians of the Baltimore region in 1935 under the leadership of E. B. Dibbell, nationally famous small animal practitioner, now publishes a monthly bulletin. This society held its first meeting at the office of Dr. Dibbell, September 5, 1935, and has held stated meetings at irregular intervals since that date. Among the other leaders prominent in launching and maintaining this organization are: Drs. Spranklin, Smothers, Ziegler, Gadd, Foster and others not named in the report. The presidents, in the order named, were Wm. Spranklin, E. B. Dibbell, John Engle, F. W. Spranklin, William Smothers, and John Gadd. The secretaries have been Drs. Dibbell, Spranklin (F. Wm.), Smothers, Gadd, and Ziegler. The present officers are: John Gadd, of Towson, president; Bert W. Bierer, of Towson, secretary; J. A. B. Stewart, of Pikesville, treasurer; and Charles Ziegler, of Catonsville, vice-president.

Plans were laid for holding meetings at regular intervals, for bringing out a larger attendance and increasing the membership, for the appointment of committees to carry out special projects, and for submitting reports of the meetings to the J.A.V.M.A.

The meetings will hereafter be held in the hall of the Humane Society of Baltimore County, on Park Heights Avenue.

BERT W. BIERER, *Secretary.*

Minnesota

Annual Conference.—The Division of Veterinary Medicine of the University of Minnesota conducted its nineteenth annual short course and the Minnesota State Veterinary Medical Society held its forty-second semiannual meeting at University Farm, St. Paul, June 24-25. H. G. McGinn, president of the Society, and W. L. Boyd, chief of the Division, presided over the classroom, business and dinner sessions.

Ashe Lockhart of Kansas City, Mo., discussed and demonstrated some of the more significant infectious diseases of swine. With demonstrations of immunization and therapeutic technics R. C. Dunn of the Department of Bacteriology and Pathology, School of Veterinary Medicine, Texas A & M College, ably presented data relative to diseases of poultry. W. H. Riser of Des Moines, Iowa, discussed and demonstrated the reduction of fractures and the care and treatment of traumatized wounds in small animals.

The present status of pullorum-disease control in Minnesota was related by L. E. Jenkins of the livestock sanitary board and W. K. Dyer, secretary of the Minnesota poultry improvement board. W. J. Fretz, BAI inspector-in-charge for Minnesota, and C. E. Cotton, secretary and executive officer of the livestock sanitary board, gave a word picture of the present status of Bang's disease control in the state.

A panel discussion of artificial insemination was conducted and supplemented with demonstrations on dissected and clinical subjects. W. Wisnicky of the University of Wisconsin described the artificial insemination program in Wisconsin and E. A. Hanson of the extension service of the University of Minnesota told of the work being done with insemination in this state. Artificial insemination from the viewpoint of the geneticist was discussed by L. M. Winters of the Division of Animal Husbandry, University of Minnesota. The physiologic and practical application of insemination phenomenon and technics in large animals was presented by Fred Miller of Whitewater, Wis., and Tom Canfield of the poultry division of the University of Minnesota told of its use with poultry.

C. H. Bailey, dean and director of the Department of Agriculture of the University of Minnesota, Superintendent J. O. Christianson,

director of the short courses, and W. L. Boyd each gave short talks at the dinner sessions.

H. C. H. KERNKAMP, *Reporter.*

Nevada

Director W. B. Earl, D.V.M., of the state animal industry division arranged for testing horses for dourine in the northern part of the state during August. Horses destined for interstate shipment must be certified as dourine-free, pursuant to federal regulations.

New York

Plans to provide air raid protection for animals have been started in New York City by the American Red Star Animal Relief. The pattern cut by the veterinarians of Britain and the methods they have put into use are being studied, says Roland of the *New York Sun.*

Oklahoma

Despite repeated campaigns against cholera, and information regarding vaccination, hog cholera remains the No. 1 disease among hogs in Oklahoma.

Ontario

Conference and Meeting.—A veterinary conference sponsored and arranged by the staff of the Ontario Veterinary College was held in conjunction with the regular meeting of the provincial association, July 15-17. Three literary sessions and a clinic were held. The sessions were presided over by C. D. McGilvray, J. S. Glover and A. F. Bain, respectively. R. A. McIntosh, W. J. R. Fowler and H. R. Potter conducted the large animal clinic. The subjects and speakers were:

Malignant Catarrh of Cattle by F. W. Schofield.

Mastitis by R. A. McIntosh.

Factors in Animal Growth by L. Stevenson.

Experiment on Pig Feeding by C. E. Phillips.

Swine Diseases in Alberta by T. Lloyd Jones.

Bang's Disease by C. D. McGilvray and J. S. Glover.

Nutrition by S. E. Roe.

Diet Therapy by E. W. Crampton.

Swine-Disease Autopsies by R. T. Ingle.

J. A. Henderson of Urbana, Ill., participated in the small animal clinic, directed by C. D. McGilvray, F. J. Cole, O. D. Nordland and J. E. Johnson.

A dinner was given at the Cutten Field golf club, by the provincial association.

The president of the Ontario association is Wm. Tennant of Bowmanville and the secretary is W. J. Rumney of Hamilton. The vice-presidents are H. M. LeGard of Weston and H. J. Davis of Aylmer.

Oregon

On July 23, Governor Charles Sprague appointed Elwyn Coon of Forest Grove and Mitchell J. Smith of Tillamook to succeed Charles H. Seagraves of Oregon City and John F. Rankin of Astoria on the examining board. Emmett W. Cantrall, who was filling an unexpired term, was reappointed. Fred W. Lange of Salem and Otto Ruehle of Portland are the other members of the board.

• • •

According to an opinion handed down by the attorney general, under the revised practice act the annual license fee of $3 becomes payable on January 1st of each year, and all licenses granted under the former statute are payable the year they expire.

C. H. SEAGRAVES, *Resident Sec'y.*

• • •

Marking Animals.—State Veterinarian W. H. Lytle calls attention to the dubious value of marking animals in ways not provided by law. The announcement is intended to curb activities of persons trying to sell ranchers a special marking service. Animals must be branded according to law and the brand must be recorded to be recognized as evidence of ownership in the courts.

Utah

State Association.—The annual meeting of the state association was held in Logan, July 2-3, at the science building of the state agricultural college.

James Farquharson of Colorado State College spoke on intravenous medication, presented motion pictures on surgery and other subjects and gave clinical demonstrations. His film contributions included embryotomy of the oversized fetus, cicatrized rupture of the perineum (gill-flirt), poultry diseases and equine encephalomyelitis.

Wendell Krill, entomologist of the U. S. Department of Agriculture, read a paper on liver flukes in cattle and sheep.

State Veterinarian W. H. Hendricks spoke on bovine brucellosis; R. W. Gold, city meat inspector of Salt Lake City, on city meat inspection; C. J. Flint of Salt Lake City on convulsions in dogs; and Wayne Binns of Utah State College on mastitis.

• • •

The Utah Livestock Purchasing Coöperative was organized at a meeting held in Salt Lake City in July, under the sponsorship of the Farm Bureau, the extension service and the Farm Security Administration. One of the objects expressed was the procurement of better sires. The association, which operates under a state law, will pool funds for providing small breeders with better stock.

Virginia

State Meeting.—The forty-eighth annual meeting of the Virginia State Veterinary Medi-

cal Association was held at Lynchburg, July 9-10, with headquarters at the Virginian Hotel. There were 58 veterinarians registered and almost as many ladies.

The two-day session was filled out by a well-balanced literary program and clinics for both large and small animals, the latter having been arranged by L. E. Bowen of Lynchburg, chairman of the local arrangements committee. G. B. Schnelle of Boston, Mass., was in charge of the small animal demonstrations and W. W. Dimock of the University of Kentucky, Lexington, Ky., and W. F. Guard of The Ohio State University, Columbus, Ohio, were co-directors of the large animal clinic.

I. D. Wilson officiated as toastmaster at the annual banquet, held on the evening of July 9.

Officers elected for the ensuing year are H. L. Lyon of Hillsville, president; P. J. Landis of Norfolk, first vice-president; L. E. Bowen of Lynchburg, second vice-president; Taylor P. Rowe of Richmond, treasurer; and E. P. Johnson of Blacksburg, secretary.

A. J. SIPOS, *Reporter.*

Wisconsin

Director Ralph Ammon of the Wisconsin department of agriculture has appointed a veterinary advisory committee to coöperate with him and the seven commissioners of agriculture, who constitute the state board of agriculture. Following is the personnel of this committee, which comprises representatives selected from among the present officers of the various veterinary groups, the state examining board, the state university and the U. S. Bureau of Animal Industry:

1) R. C. Finkle of Seymour, president of the state association, member-at-large.

2) H. J. Jacobson of Denmark, president of the northeastern association.

3) A. J. Kletti of Slinger, president of the southeastern group.

4) R. B. Hipenbecker of Fennimore, president of the southwestern group.

5) S. K. Andreassen of Menomonie, president of the north-central group.

6) T. H. Ferguson of Lake Geneva, C. H. Van de Sand of Kiel and G. B. Wrigglesworth of Eau Claire—to represent the examining board.

7) B. A. Beach of the College of Agriculture, University of Wisconsin, Madison.

8) J. S. Healy of the U. S. Bureau of Animal Industry, Madison.

At its first session the committee elected B. A. Beach as chairman and secretary. It is the duty of the secretary to arrange for meetings of the commissioners of agriculture through the director when matters arise that affect the interests of local veterinarians or of any of the various interests represented in this council.

Through this step the state department has declared its interest in the welfare of the veterinary profession and its respect for their advice relative to policy in dealing with the livestock industry. A further ramification of this new departure is legal support for Wisconsin veterinarians in eliminating quackery and illegal practice.

J. S. HEALY, *Resident Sec'y.*

Wyoming

State Association.—The annual meeting of the Wyoming Veterinary Medical Association was held in Riverton, June 23-24. Vice-President R. F. Noah presided in the absence of President Kight, who was detailed on account of illness. J. B. Fuller was elected president for the coming year. Vice-President Noah and Secretary Scrivner were reëlected.

On the program were the following contributions and reporters:

Keratitis in Cattle—H. E. Kingman, Wyoming Hereford Ranch, Cheyenne.

Listerellosis—Floyd Cross, Colorado State College, Fort Collins, Colo.

The Treatment of Shipping Fever and Its Complications with Potassium Guaiacol Sulfonate—N. J. Miller, Eaton, Colo.

The Uses of Biological Products—H. C. Smith, Fort Dodge Laboratories, Fort Dodge, Iowa.

New Rulings of the U. S. Bureau of Animal Industry as They Affect the Practitioner—A. G. Fisk, Fisk Supply Company, Denver, Colo.

The U. S. Bureau of Animal Industry Program of Bang's Vaccination—F. H. Melvin, inspector-in-charge for Wyoming, Cheyenne.

The Local Use of the Sulfonamides with Special Reference to Compound Fractures—K. W. Smith, Colorado State College, Fort Collins, Colo.

Anaplasmosis from the Clinician's Viewpoint—F. E. Carroll, Laramie.

Recent Advances and Discoveries in Veterinary Medicine—Frank Breed, Norden Laboratories, Lincoln, Neb.

Recent Findings of the BAI in Infectious Equine Anemia—F. H. Melvin.

Two sound films were shown by the Winthrop Chemical Company of New York.

A banquet and dance was given at the club El Toro in Hudson.

L. H. SCRIVNER, *Secretary.*

COMING MEETINGS

Small Animal Hospital Association. Los Angeles, Calif. Septemper 2, 1941. W. K. Riddell, secretary, 3233 W. Florence Ave., Los Angeles, Calif.

New York City, Veterinary Medical Association of. Hotel New Yorker, New York, N. Y. September 3, 1941.

Dallas-Fort Worth Veterinary Medical Society. Dallas, Texas. September 4, 1941. Frank

Brundrett, secretary, 1809 Atwood, Route 2, Dallas, Texas.

St. Louis District Veterinary Medical Association. 7800 Olive St. Road, St. Louis, Mo. September 5, 1941. J. P. Torrey, secretary, 555 N. 14th St., East St. Louis, Ill.

Ak-Sar-Ben Veterinary Medical Association. Fontenelle Hotel, Omaha, Neb. September 8, 1941. J. D. Ray, secretary, 1124 Harney St., Omaha, Neb.

Chicago Veterinary Medical Association. Hotel Sherman, Chicago, Ill. September 9, 1941. G. S. Elwood, secretary, 5449 Broadway, Chicago, Ill.

San Diego County Veterinary Medical Association. Zoölogical Research Bldg., Balboa Park, San Diego, Calif. September 15, 1941. Paul D. DeLay, secretary, State Poultry Pathological Laboratory, Balboa Park, San Diego, Calif.

Kansas City Veterinary Medical Association. Kansas City, Mo. September 16, 1941. Glen L. Dunlap, secretary, 800 Woodswether Road, Kansas City Mo.

Southern California Veterinary Medical Association. Chamber of Commerce Bldg., Los Angeles, Calif. September 17, 1941. Charles Eastman, secretary, 725 S. Vancouver Ave., Los Angeles, Calif.

University of Illinois, Veterinary Conference. University of Illinois, Urbana, Ill. October 14-15, 1941. Robert Graham, chief in animal pathology and hygiene, University of Illinois, Urbana, Ill.

American Public Health Association. Convention Hall, Atlantic City, N. J. October 14-17, 1941. Further information may be obtained from the American Public Health Association, 1790 Broadway, New York, N. Y.

Purdue University Veterinary Short Course. Purdue University, Lafayette, Ind. October 15-17, 1941. C. R. Donham, chief veterinarian, Purdue University, Lafayette, Ind.

Southern Veterinary Medical Association and Florida Veterinary Medical Association (joint meeting). George Washington Hotel, Jacksonville, Fla. October 27-29, 1941. L. A. Mosher, secretary (SVMA), Box 1533, Atlanta, Ga.

PERSONAL NOTES

Births

To Captain and Mrs. Geo. A. Ferguson, Sr., of Fort Jackson, S. Car., a son, Charles Marvin, July 12, 1941.

To Dr. (O.S.U. '33) and Mrs. Forrest McClead of Elyria, Ohio, a son, Michael Alan, June 24, 1941.

Marriages

Arthur M. Orum (Iowa '41) of Carthage, Ill., to Margaret Ellen Gross of Ames, Iowa, August 10, 1941, at Ames, Iowa.

Leif A. Septon (Wash. '41) of The Dalles, Ore., to Elizabeth Jean Bauer of Waukesha, Wis., August 30, 1941, at Portland, Ore.

Activities

H. D. Perry (Iowa '31) was elected to the board of education of Yankton, N. Dak., in June, defeating H. A. Doyle, a local attorney.

Karl B. Hammerburg (Ont. '10) of New London, Wis., has taken charge of the artificial insemination ring at Shawano, Wis.

W. H. Eyestone (K.S.C. '41) has joined the research staff of the veterinary division, University of Wisconsin, Madison, Wis.

W. D. Pounden (Colo. '38), formerly of the University of Wisconsin veterinary staff, has accepted a position as laboratory pathologist with the Wisconsin state department of agriculture at Madison, Wis.

Lieut. Colonel Ernest W. Hogg (U.P. '14), who reorganized the veterinary corps of the Pennsylvania National Guard following his experiences as division veterinarian of the seventy-ninth division, A.E.F., has reëntered general practice at Wilkes-Barre, Pa., after having been declared physically incapacitated for military service.

DEATHS

John A. O'Connell of Dorchester, Mass., died on June 19, 1941, from injuries incurred when he was struck by an automobile.

Born at Boston, Mass., April 30, 1875, Dr. O'Connell was graduated from Harvard University in 1896. He joined the AVMA in 1932.

Archie R. Madson of Mishicot, Wis., died of a heart attack on July 9, 1941.

Dr. Madson was graduated from the Chicago Veterinary College in 1912.

Glenn A. Tucker of Vista, Calif., died in January of 1941.

Born at Roseville, Ill., January 14, 1888, Dr. Tucker was graduated from the Kansas City Veterinary College in 1911. He joined the national association in 1936.

Ellis E. McCoy of Staunton, Va., an employé of the U. S. Bureau of Animal Industry, died in August of 1941.

Born at Yutan, Neb., November 9, 1878, Dr. McCoy was graduated from the Kansas City Veterinary College in 1907. He joined the AVMA in 1915.

J. S. Donald of Bay City, Mich., died on May 18, 1941.

Born in Scotland, October 9, 1852, Dr. Donald was graduated from the Ontario Veterinary College in 1889 and entered practice that year in Bay City.

Each lot of B. T. V. proves its immunizing ability. Susceptible pigs, given a single 5 c.c. dose of B.T.V. must withstand a subsequent dose of virus which uniformly kills the controls—a more severe test than any field exposure.

One dose OF CUTTER B.T.V.

PROTECTS AGAINST CHOLERA 'TIL MARKET

As the result of extensive field experience, dosage recommendations on Cutter B. T. V. no longer call for two injections on pigs which are to be marketed. A single dose of this vaccine confers immunity of several months' duration.

Give your clients the benefit of this safe immunization procedure, which eliminates the necessity for bringing living virus on the premises and avoids virus "breaks" and virus "stunting."

CUTTER *Laboratories*

BERKELEY
California

CHICAGO
111 N. Canal St.

NEW YORK
138 W. 53rd St.

"We Wouldn't Be Here If It Weren't for PERANDREN*"

—Testicular Hormonal Substance Restores Copulatory Power in Impotent Dogs

Excellent results are being obtained from the use of PERANDREN in sexually impotent male humans and various animals, small and large. Particularly good are reports concerning selected cases of impotence in dogs injected with PERANDREN, "Ciba", a form of the most powerful male sex hormone known. Tying ensued in a matter of 24 to 48 hours with subsequent litters of healthy whelps.

LITERATURE UPON REQUEST

*Trade Mark Reg. U. S. Pat. Off. Word "Perandren" identifies the product as testosterone propionate of Ciba's manufacture. Available through usual trade channels.

CIBA PHARMACEUTICAL PRODUCTS, INC.
Summit, New Jersey

An' Related Topics

Compact Meat for Shipment

One of the reforms coming from World War II is the transportation of meat, milk and other food products in compact form, already mentioned in the JOURNAL (*vide*, p. 62, July 1941 issue). While the main object is to conserve space in food convoys (railways, trucks, airplanes, *et al.*), the reform may also revolutionize the whole plan of human nutrition. It is now possible to ship the meat of 51,000 head of cattle in the cold-storage compartment of a ship that could hold but 6,000 carcasses shipped in the old form and way. An airplane of 3½-ton capacity can now carry the equivalent of 120 or more carcasses of cattle.

The concentrate which has made this reform possible was discovered by Col. Pickford, South African veterinarian, formerly head of the Army Veterinary College at Aldershot, England. Although compact meat does not replace the juicy beef steak, its nutritive value is not curtailed.

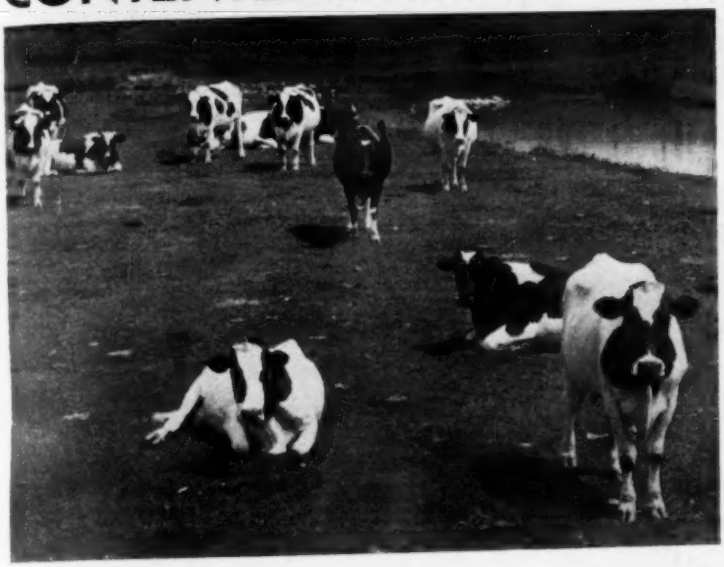
Irish Horse Traders of the South

It is not generally known that there is a society of wandering horse and mule dealers in the South called the Irish Horse Traders. Atlanta is its headquarters. The membership is estimated to be from 4,000 to 10,000. The exact address is 860 Peachtree street, Atlanta, home and office of an undertaker whence the members are pledged to be buried when taps sound off, a logical arrangement for addressless nomads. The members travel in small groups all over the Southland east of the Mississippi, and contrary to what one might suppose, their business ethics score far and above the tactics of the gyps. Their family life is above reproach, and honesty is their best asset, the reporter declares.

The members of this strange *bund* are descendants of Washington (D. C.) liverymen who took to the road on account of hard times after the War Between the

(*Continued on page xviii*)

CONTENTED IN HEALTH and GROWTH..



PRODUCTIVE
of
STURDY CALVES
and
CONTINUOUS
RICH
MILK FLOW
with the Help of . .

Calcium
Phosphorus

VIAMINERAL

Iodine
Yeast

in This

DAILY RATION for DAIRY CATTLE

With Mixed Legume Roughage

(Corn silage, corn stover, cane, timothy or other non-legumes with alfalfa, clover, cowpeas or soybeans.)

* 1000 lbs.	ground corn
** 600 lbs.	wheat bran
*** 200 lbs.	O. P. linseed oil meal 34%
*** 200 lbs.	cottonseed meal 43%
40 lbs.	VIAMINERAL
20 lbs.	common salt
2060 lbs.	

AVERAGE ANALYSIS

Crude Protein	17.2%
Fiber	5.8%
Fat	4.8%
N. F. E.	57.6%

Grind to medium fineness. Jersey and Guernsey cows—1 lb. for each 3 lbs. milk. Holstein or Shorthorn cows—1 lb. for each 4 lbs. milk.

* 50% of corn may be substituted with ground wheat.
* Substitutes for corn pound for pound—corn and cob meal, ground barley, ground kaffir or milo, hominy feed.
** Substitutes for wheat bran pound for pound—ground oats, alfalfa meal, wheat middlings.
*** Substitutes for linseed oil meal and cottonseed meal pound for pound—gluten meal 35%, soybean oil meal 43%, crushed soybeans.

VIAMINERAL is a supplemental FEED—not a medicine. An odorless, tasteless, quickly assimilated compound—easily and economically fed. Available ONLY through veterinarians. Write today for literature and prices.

VITAMINERAL PRODUCTS CO.

1522 No. Adams

Peoria, Ill.

NOTICE

The important new, dry micro-reagent

Galatest

affords an accurate, instantaneous and inexpensive means of making routine tests for

Sugar in Urine

Now at the disposal of members of the medical and allied professions.

Veterinarians will find Galatest useful in their practice for the quick detection of incipient or established cases of canine diabetes.

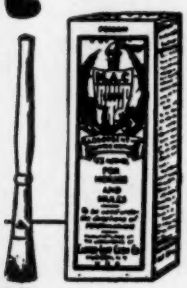
For particulars address:

The Denver Chemical Mfg. Co.

163 Varick Street, New York

GUARANTEED TO GIVE SATISFACTION

M·A·C



ACCEPTED AND USED BY THE PROFESSION SINCE 1900

IN THE TREATMENT OF

Splints, Spavins, Curbs, Side Bones, Inflamed Tendons, Bursal Lameness, Etc.

Single Bottle	$ 2.00
1-4 Dozen and One FREE . . .	5.00
1-2 Dozen and Two FREE . . .	8.00
1 Dozen and Four FREE .	15.00
2 Dozen and Four FREE . .	25.00

AGENTS

Wingate Chemical Co. MONTREAL — **Kentucky Serum Co.** LOUISVILLE, KY

CARTER-LUFF CHEMICAL CO.

The Originators of Packaged Medicines for Veterinarians

HUDSON, N. Y.

An' Related Topics

(*Continued from page xvi*)

States. Their customers range from the one-mule sharecropper to the pretentious planter, many of whom solicit these traders' judgment as to the mules to trade off for better ones.—*From Readers Digest.*

Tung Oil: Home Production

The Bureau of Plant Industry, U. S. Department of Agriculture, has planted more than 40,000 tung trees in regions skirting the Gulf of Mexico and farmers of that territory are being advised to plant these trees as a sideline, not as a one-crop enterprise. The object is to make this country self-contained in tung oil, which is extensively used as an ingredient of quick-drying paints.

Just Step on the Gas

The plea for increased food production as told during the Farm and Home Hour over the NBC-Blue network was for more milk, eggs and pork which means but little were cows, hens and sows not kept healthy. There are quite a few ever-ready infections of each of these living food makers that factory-minded advisers never think about when telling farmers to "step on the gas." The saboteur might just turn on the spigot of foot-and-mouth disease, of fowl pest and of hog cholera and thus make the CIO strikes look like Maypole larks.

Theelin (=Female Sex Hormone)

The first pure crystalline sex hormone was isolated in 1929 by Dr. Edward A. Doisy, School of Medicine, St. Louis University. A short time later, a second hormone—theelol—was discovered in Dr. Doisy's laboratory, and in 1936, a third one—dihydrotheelin—was isolated by him. For these discoveries and others in the field of biological chemistry, particularly the fractionation of vitamin K, Dr. Doisy was awarded the Willard Gibbs Medal of the Chicago Section of the American Chemical Society, in Chicago, May 24, 1941.

(*Continued on page xx*)

CLASSIFIED ADVERTISEMENTS

Twenty-five words or less, $2.50; 8 cents for each additional word. Replies sent in care of the JOURNAL, 25 cents extra.

For Sale

SMALL ANIMAL hospital in Westchester county, N. Y. Large boarding kennels and home. Lucrative practice; increased over 100% in past year. No limit except your ability. Some cash necessary. Address: Dr. Charles Hoefle, 384 Gramatan Ave., Mount Vernon, N. Y.

PREDOMINANTLY large animal practice in northern California. Well-equipped office. Instruments, less microscope. 1940 gross income $16,000. Price $2,000. Reason for selling: Army duty. Address: "CC," c/o Journal of the AVMA.

WISCONSIN PRACTICE (mixed), established 26 years. Fine town; practice comprises 40-mile territory—none better in state. Moderate investment, terms. Address: "W," c/o F. V. Kniest, 1537 S. 29th St., Omaha, Neb.

PRACTICES, locations and partnerships furnished and sold—all states. F. V. Kniest, 1537 S. 29th St., Omaha, Neb.

For Rent

FINE 5-YEAR-OLD small animal hospital and apartment, located in Hollywood-Beverly Hills, Calif., district, only a few blocks from wealthy residential section and movie colony. For rent on long time lease. Address: "LG," c/o Journal of the AVMA.

Wanted

EXPERIENCED veterinarian wants to take over or purchase mixed or small animal practice. Address: "CO," c/o Journal of the AVMA.

VETERINARIAN wanted to take over, for a time, practice in Minnesota on full-income or share-income basis. No investment. Address: "M," c/o F. V. Kniest, 1537 S. 29th St., Omaha, Neb.

HIGH-TYPE male assistant wanted, capable of passing state board. Single; must not use liquor; confidence in ability to meet people; desirous of permanent position. Address: Dr. T. H. Agnew, 80 N. Daisy Ave., Pasadena, Calif.

Positions Wanted

VETERINARIAN, 30, single, Christian, experienced. Conn., Vt., and Texas licenses. Desires position with general practitioner. Address: F. W. Grohe, 928 W. Huisache, San Antonio, Texas.

SMALL ANIMAL hospital position wanted by reliable, experienced Ontario graduate, age 26. Wife is hospital technician, experienced in small animal nursing. Both at present in small animal hospital; both would like to work, if possible. Desire residence in U. S. Excellent references. Address: "QW," c/o Journal of the AVMA.

Books and Magazines

DOG SENTIMENT CARDS for office wall, set of 12, 60 cents. Judy's *Dog Encyclopedia*, all dog subjects, $5. *Dog World* monthly, $2 for one year; $3 for 2 years; $5 for 5 years. JUDY PUBLISHING COMPANY, 3323 Michigan Blvd., Chicago, Ill.

WINDGALLS

The use of Antiphlogistine is indicated as part of the routine treatment of this condition.

Its heat and medication are helpful in all cases of acute bursitis.

ANTIPHLOGISTINE

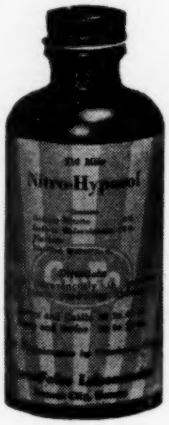
Decongestive • Antiseptic • Repair-promoting

Sample and literature on request.

The Denver Chemical Manufacturing Company

163 Varick Street . . . . . New York

Nitro-Hyposol



SOLUTION

For hydrocyanic acid poisoning.

6-250 cc . . . $3.00

TABLETS

For toxemia incident to colic, and alimentary stasis.

6-100s $9.45

Curts-Folse Laboratories

73 Central Avenue
Kansas City, Kansas

UNIVERSITY OF PENNSYLVANIA

School of Veterinary Medicine

PHILADELPHIA

Offers a complete course in veterinary medicine extending over four sessions, each beginning the fourth Monday in September and ending the second Wednesday in June. Clinics and equipment unexcelled.

Graduate Courses in Pathology and Bacteriology (including immunology) extending through one session.

For Catalogue and further information, address

GEORGE ALEXANDER DICK,
Dean, Veterinary Faculty

An' Related Topics

(*Continued from page xviii*)

Camels

The hump of the camel is composed mainly of fat. It constitutes about 7.5 per cent of the total body weight and is not any more concerned in carrying water than the other fat of the body, nor do the fore stomachs of the camel store water. The water reserve of the camel is carried in its tissues (mainly its fat), whence it draws the water needed to carry on when water is scarce.

Not including the two-humped type of Asia, there are about 4½ million in all the world. East and North Africa, Arabia and India are the homes of this slow but useful ruminant. The spread of World War II into the lands of the camel has revived interest in the old notions about these ships of the desert.

A Useful Avitaminosis

It has frequently been said that there is nothing whatsoever in Nature that does not (or that can not be made to) serve a useful purpose. When the fur farmers of Norway got the upper hand on the silver fox fur market by supplying a fur having an unusual amount of white hairs scattered over the pelt, they were not aware that the cause of their good fortune was a vitamin deficiency in the food they were feeding. To be exact, their fine so-called platinum pelts were brought about by an avitaminosis —anti-gray hair vitamin (filtrate factor) deficiency. But science caught up with them. Graying in silver foxes can be produced *ad libitum* by merely depriving foxes of that factor.

Readers interested in the details may study an article on the subject in the April 1941 issue of the *American National Fur & Market Journal* by Agnes Fay Morgan and Helen Simms.

Bombs can never be made big enough or numerous enough to do as much harm as one morale-destroying speech.

(*Continued on page xxii*)

For Members Only . . .

A further improved

AVMA AUTOMOBILE EMBLEM

It's new—and it's the handsomest emblem ever made available to AVMA members. Brilliantly designed in red, gold and white.

$1.50
(POSTPAID)

Send orders to:

AMERICAN VETERINARY MEDICAL ASSOCIATION
600 S. Michigan Ave.
Chicago

ATTACHES TO THE LICENSE PLATE OR LICENSE-PLATE HOLDER

Free Folder for Veterinarians

. . . outlining the treatment of various infections with

SULFANILAMIDE SQUIBB

(Para-Amino-Benzene-Sulfonamide)

Also price list quoting veterinary hospital discount price.

E. R. Squibb & Sons

Veterinary and Animal Feeding Products Division

745 FIFTH AVE., NEW YORK

"Poultry Information —Please"

"Poultry Information—Please" was presented by the Poultry Committee of the U. S. Live Stock Sanitary Association at that organization's forty-fourth annual meeting (Chicago, December 4-6, 1940) as a symposium on diseases of chickens and turkeys. By special arrangement the published proceedings of this symposium have been reprinted in pamphlet form, comprising 42 pages of discussions of bacterial, virus, nutritional and parasitic diseases.

Copies of this document are available at 15 cents each, postpaid. Orders should be sent on the coupon provided below to the American Veterinary Medical Association, 600 S. Michigan Ave., Chicago, Ill.

A limited number of USDA Publication No. 300, "The National Poultry Improvement Plan," (price 10 cents) are on hand and will be supplied, while they last, without extra charge with each order for "Poultry Information—Please."

Send ..... copies of "Poultry Information—Please," for which I enclose $..... [Stamps acceptable in amounts under $1.00.]

Name .....

Address .....
(Street)

.....
(Town) (State)

An' Related Topics

(Continued from page xx)

Lives Lost in Burning Homes

There are 18 persons burned to death in burning homes every day in the United States, says a writer in *The Woman* for March 1941. Most of these deaths could be prevented if families would hold fire drills occasionally. Members of the family would then be warned against running into halls and stairways when the house is afire. Superheated combustion gases may kill as soon as one opens the door to the hall. Better to take a chance to escape through a window.

Chief Sweeney, many years the fire marshal of Chicago, once said that the best way to escape from a burning building is to reverse the window sashes, that is put the under sash up and the upper one down, get out on the ledge and wait for the rescue that is pretty sure to come. With window sashes thus reversed the uppermost sash gives a good handhold.

"Gone to the dogs," explains *Tailwagger*, is a phrase derived from the ownerless dogs which rove on the outskirts of Oriental villages begging from the beggars. Hence, in everyday slang it means to lose one's wealth and prestige.

At the spring show of the Los Angeles Kennel Club, May 17-18, Mary Pickford presented the trophy for the "best dog in the show." The winner was a Boxer owned by William Robert Guy of North Hollywood.

Lord and Lady Halifax, British ambassador and his wife, are said to be great admirers of the dog. The Elkhound is their favorite breed, although, says *American Kennel Gazette*, they are fond of all dogs.

There is a whistle for calling dogs with vibrations so high that it's not audible to the human ear.

"PLUS" VALUE

Requirements of the U. S. Bureau of Animal Industry insure reasonable potency for Anti-Hemorrhagic Septicemia Serum produced by licensed establishments.

While it has long been recognized that the hemorrhagic septicemia organism plays an important part in losses incident to shipment of cattle, and that other bacterial organisms are frequently associated with these losses, there is a growing feeling among veterinary pathologists that a filterable virus is often the primary inciting cause of so-called "Shipping Fever" of cattle.

With this possibility in mind it is the practice of this firm to produce Anti-Hemorrhagic Septicemia Serum from mature bovines known to be immune to the various "Shipping Fevers" of cattle.

We believe that this "Plus" Value in Lockhart Anti-Hemorrhagic Septicemia Serum is the thing which accounts for the superiority of the results obtained from its use, as well as for the practical economy of administering it immediately before, during, or immediately after shipment of cattle.

The most efficient and economical method yet devised for preventing losses from infections incident to the shipment of cattle is the administration of a relatively small dosage of Anti-Hemorrhagic Septicemia Serum (Lockhart).

In handling 250 to 300 pound feeder calves going into feed lots, veterinarians report good results from the following procedure: Administer 20 to 25 cc Anti-Hemorrhagic Septicemia Serum (Lockhart) to each calf immediately before shipment and repeat the dose after arrival at destination. Where double treatment is not possible, good results are obtained from a single dose of 30 to 40 cc administered immediately after shipped calves arrive at destination.

ASHE LOCKHART, INC.

"Producers of Better Biologics for Graduate Veterinarians."

800 Woodswether Road **Kansas City, Missouri**

In Canada—Canada Representatives, Ltd. 193-195 Spadina Avenue, Toronto, Ontario

MEMBER Veterinary Exhibitors Ass'n

"ALL-IN-ONE"

Jen-Sal

CANINE DISTEMPER

Prophylaxis Package

Made possible through the use of long-dated liquid Distemper virus

•

You

PAY NO MORE

for this package

•

The price is the same as if the vaccine and virus were purchased separately.

•

LET THIS NEAT PROFESSIONAL PACKAGE SELL DISTEMPER IMMUNIZATION FOR YOU!

Each package contains two 5-c.c. doses of Canine Distemper Vaccine, one dose of liquid virus, one vaccination certificate, and one folder on Dog Distemper for your client. The package is made up on receipt of your order, thus insuring the use of fresh vaccine and virus at all times.

Write for a FREE supply of Canine Distemper booklets for distribution to your clients — they will save valuable time in answering the owners' questions. If you wish your name and address on the folders, there will be a charge of 75 cents to cover the cost of printing.

1 Complete Canine Distemper Prophylactic Treatment . . . . . $2.00 Code: DISCO

(Less discounts of 10 and 2 per cent)

JENSEN-SALSBERY LABORATORIES, INC.

KANSAS CITY, MISSOURI

PRINTING PRODUCTS CORPORATION—CHICAGO